ENGINEERING NEWS-RECORD

Thorndike Saville: Dean among engineers *p. 67*

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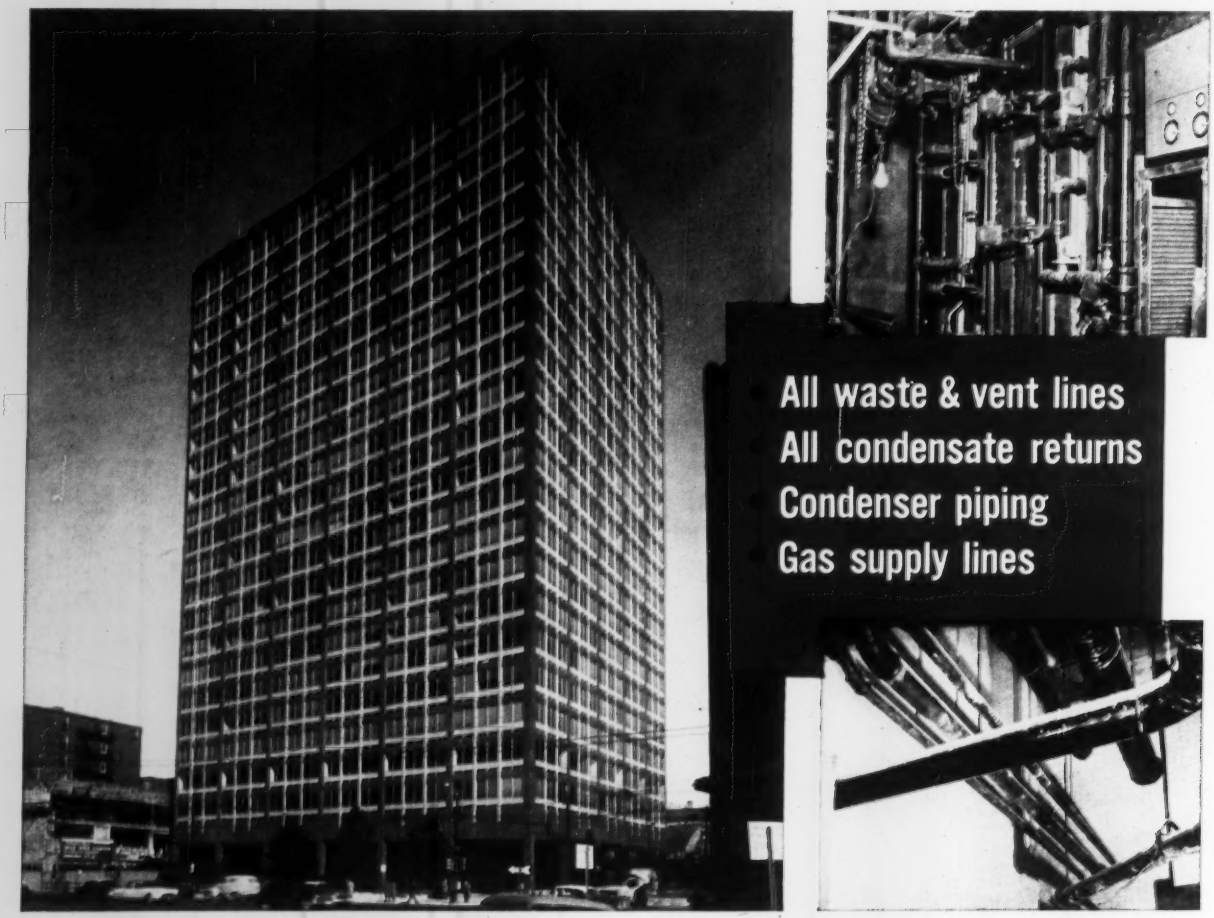

IN MILE HIGH CENTER . . . WROUGHT IRON PIPE keeps maintenance down to earth

Designers of Mile High Center applied the modern approach not only to architectural design, but also to material selection for piping services. Evidence of this practice is the selective use of wrought iron pipe. More than 24 tons are installed in service lines of this 23-story structure, located in the heart of downtown Denver, Colorado. Wrought Iron pipe, ranging from ¾-inch to 8-inch, is used to combat corrosion in condensate return lines, gas supply piping, and waste and vent services.

Owners and Developers are George A. Fuller Company and Webb & Knapp, Inc., New York City; Builder: George A. Fuller Company; Designer: I. M. Pei (Webb & Knapp, Inc.); Associate Architects: Kahn & Jacobs, New York City, and G. Meredith Musick, Denver; Mechanical Engineer: Jaros, Baum & Bolles, New York City; Mechanical Contractor: Kerby-Saunders, New York City.

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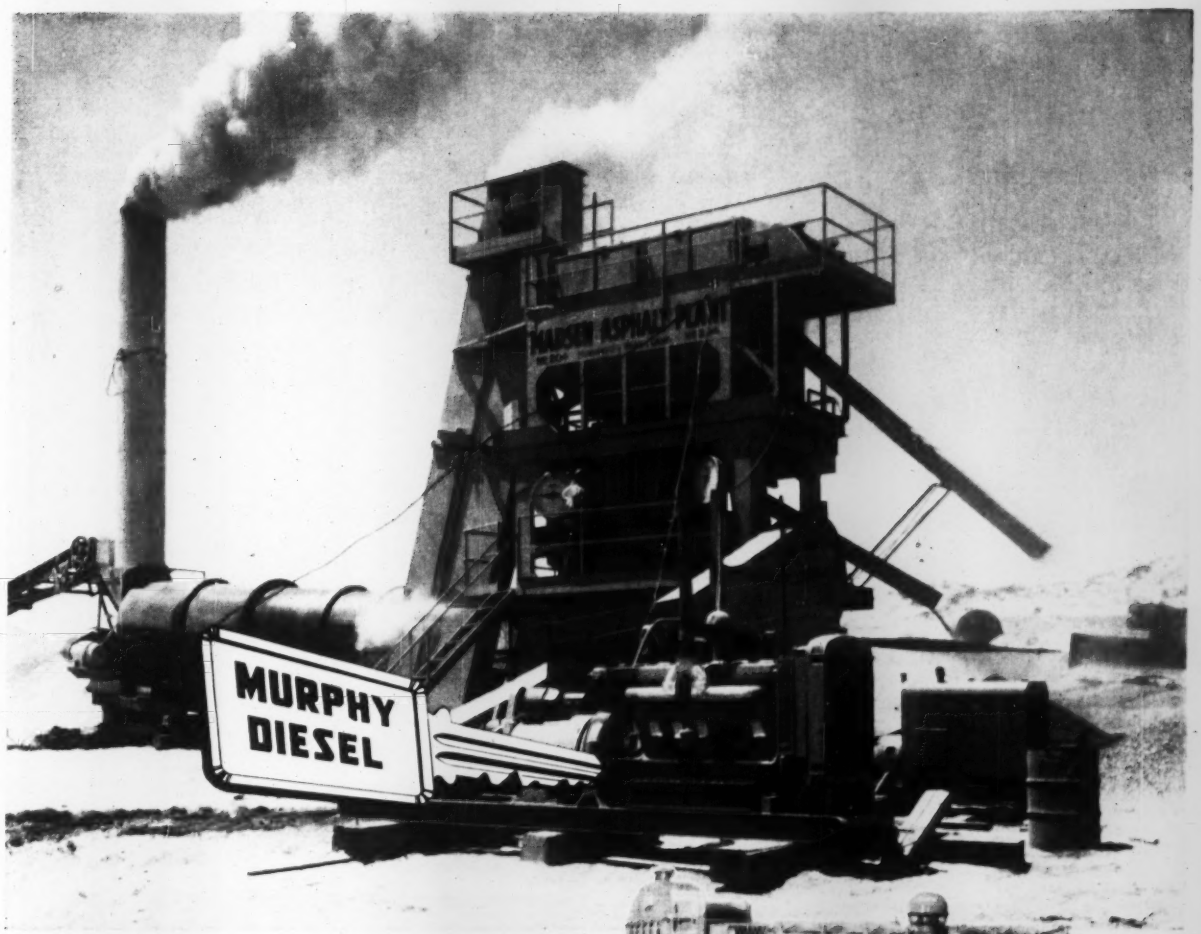

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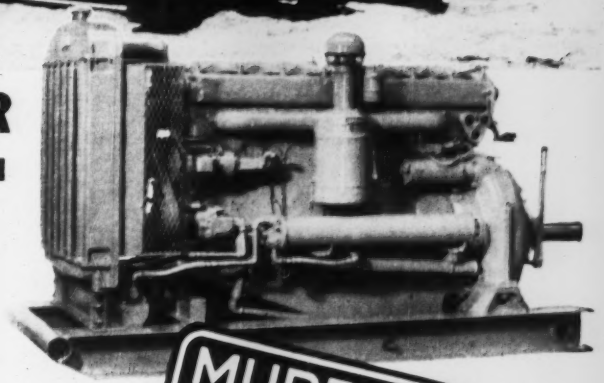

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Symons FIELD REPORT...

Symons Forms, Shores and Column Clamps Used On 525 Ft. Aqueduct at Streator, Illinois...

to carry a 27-inch pipe across a ravine.

Symons solved the difficult task of setting up to pour concrete around the vitrified tile pipe, averaging 225 pounds per foot. Weight of pipe and poured concrete is over one ton per lineal foot.

Footings 7' x 7' and 1'3" thick were first built for the concrete piers spaced 25 feet apart. Symons Column Clamps were used to form the piers—12" x 24" at the base, 12" x 48" at the top and range in height from 10 to 19 feet.

The aqueduct is 4'3" wide and four feet high. Symons Forms with steel cross members and 51-inch ties were used to form the sides, which were supported by one set of walers.

Three-quarter inch plywood formed the beam bottom, resting on 4" x 4" joists. Girths 4" x 6" were spaced every four feet and supported by Symons Safety Shores. Warren & Pragg, Decatur, Illinois, was the architect and Central Ironite Waterproofing Company, Maywood, Ill., was general contractor.

Symons Forms, Shores and Column Clamps can be rented with purchase option, all rentals to apply on purchase price. Symons Clamp & Mfg. Co., 4265 Diversey Ave., Dept. C6, Chicago 39, Ill.

View showing completed piers and aqueduct

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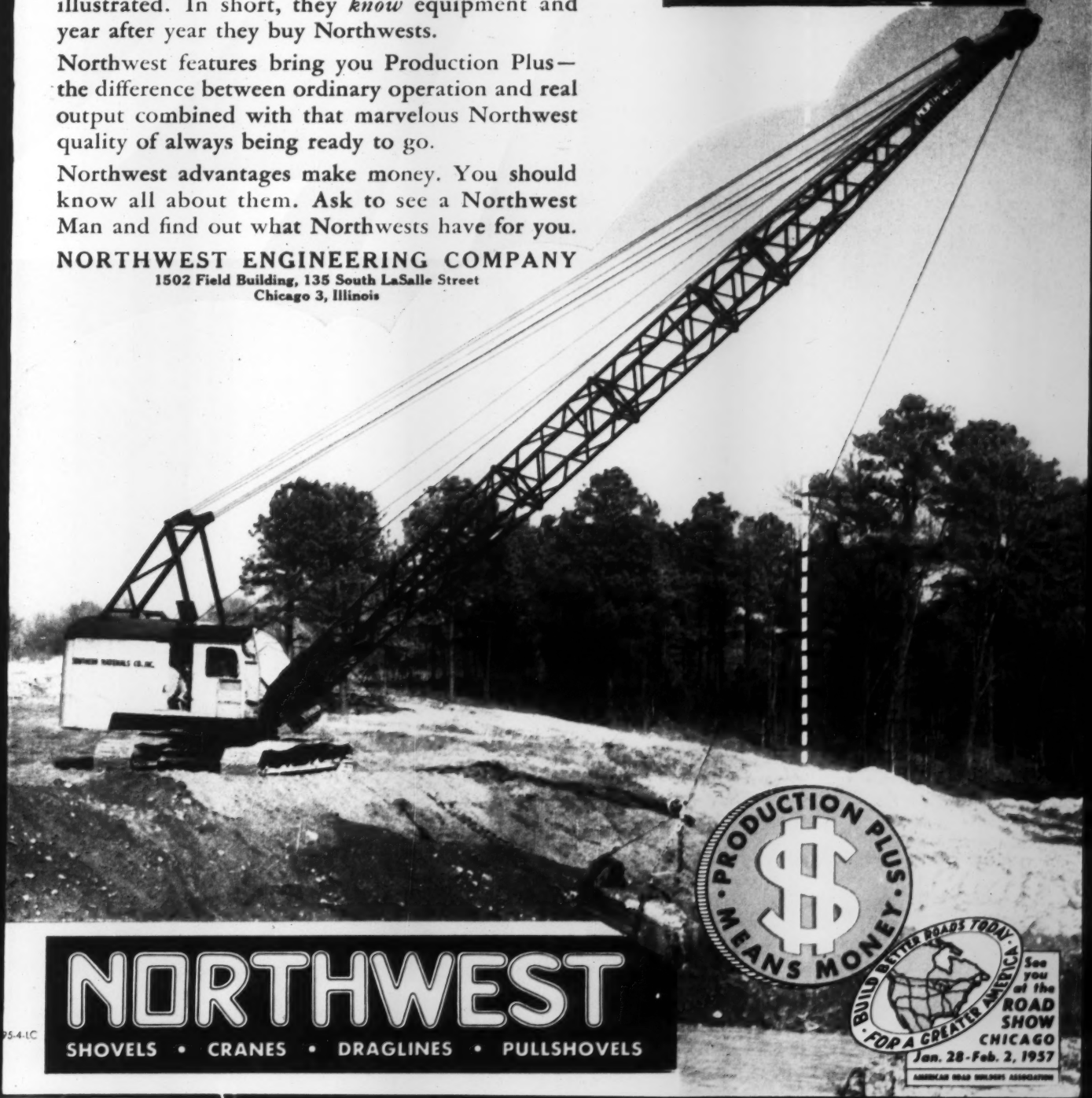
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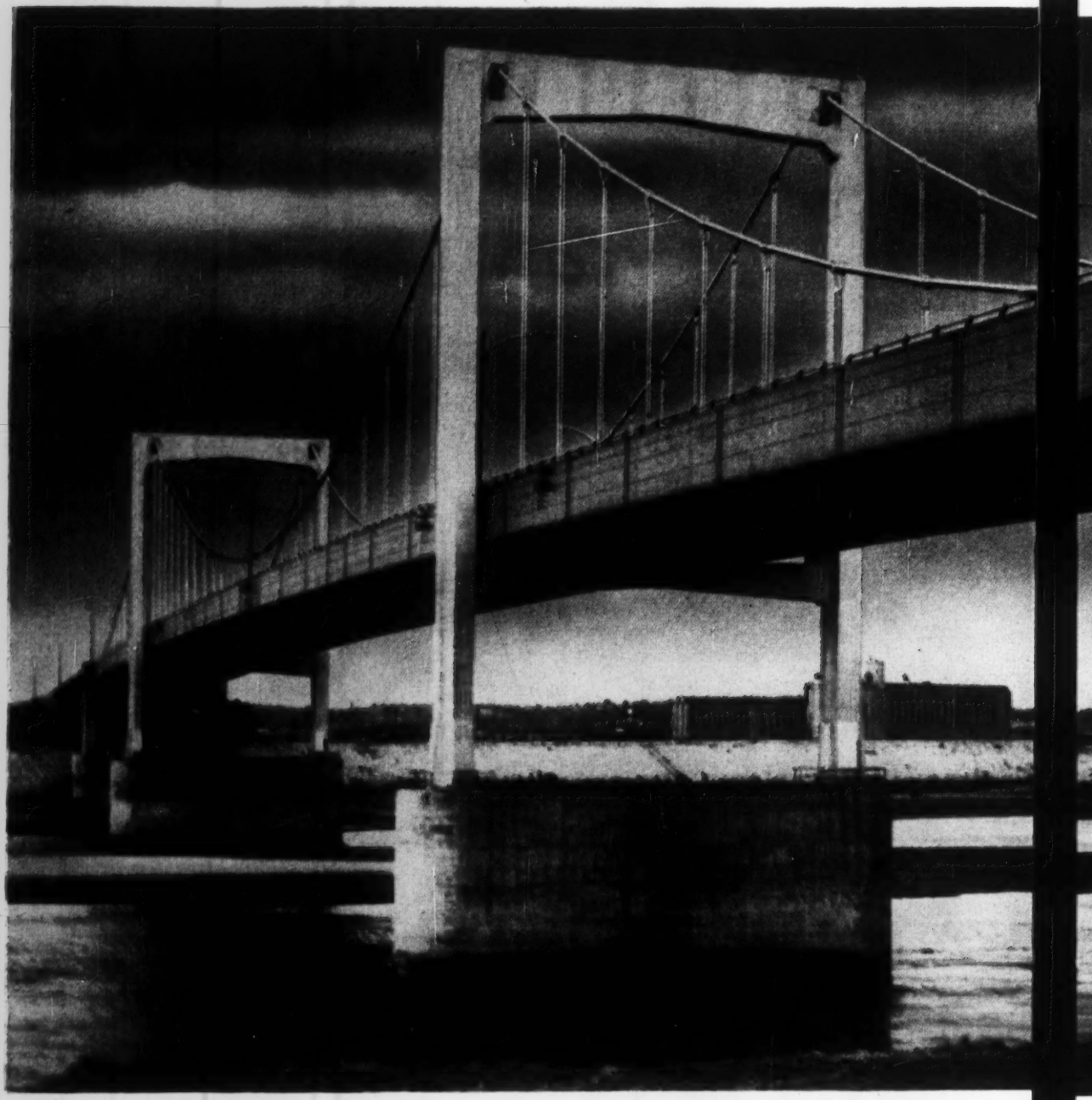

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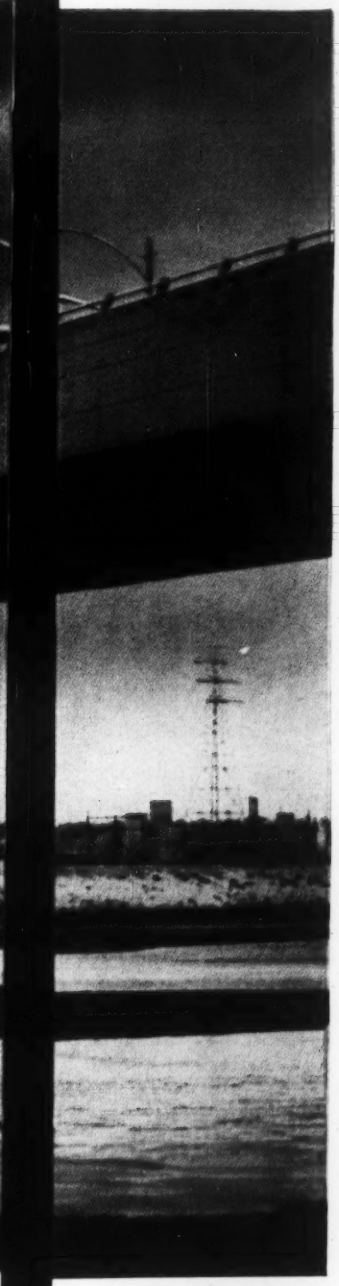

Selected by the American Institute of Steel Construction from a field of 90 entries, Paseo Bridge crossing the Missouri River at Kansas City was awarded first prize as the most beautiful steel bridge in the U. S. with a span of over 400 ft. opened for traffic in 1954.

This handsome 4-lane structure is the world's largest existing self-anchored suspension bridge. 1,232 ft. in length, it features a 616 ft. main span and two side spans of 308 ft. each. Supporting towers are 136 ft. high. The suspension unit is flanked by continuous deck girder spans at each end resulting in a total length of 1,825 ft. for the main river bridge.

Aside from its graceful lines and unusual self-anchored construction, the Paseo Bridge deserves attention as another outstanding example of the money-saving reductions in weight that can be effected by the proper use of low alloy, high strength steel . . . in this case, USS TRI-TEN "E" Steel.

A design based on the use of structural silicon steel required 3,450 tons of silicon steel in the towers, stiffening girders and adjacent deck girders. In contrast, an alternate design adopted, using USS TRI-TEN "E" Steel, reduced the tonnage needed to 3,150 tons.

In addition to saving 300 tons in weight, TRI-TEN "E" Steel lent itself readily to welding.

Here are pertinent facts about USS TRI-TEN "E" Steel to bear in mind when you are looking for the best and most economical construction:

USS TRI-TEN "E" Steel is a low alloy, high strength steel that meets all the requirements of ASTM Specification A242. It can be used for riveted bridges but is particularly applicable where welding is a primary consideration. With a yield point 50 % higher than that of structural carbon steel (ASTM A7) in thicknesses of ¾" and less, it combines atmospheric corrosion resistance equal to that of copper bearing steel. That is why TRI-TEN "E" Steel can safely be used in lighter sections to reduce weight and save steel. The smaller tonnage of steel thus required not only results in savings in material costs, but in reduced cost of steel transportation and in the size and cost of foundations. Together these savings add up to cost reductions that in some cases have run as high as 15% of the cost of the structure.

Our engineers will be glad to show you how USS TRI-TEN "E" and our other USS High Strength Steels—USS COR-TEN and USS MAN-TEN—can be incorporated into your designs to provide maximum strength, safety and durability with a minimum of weight and costs.

The Paseo Bridge at Kansas City, Missouri

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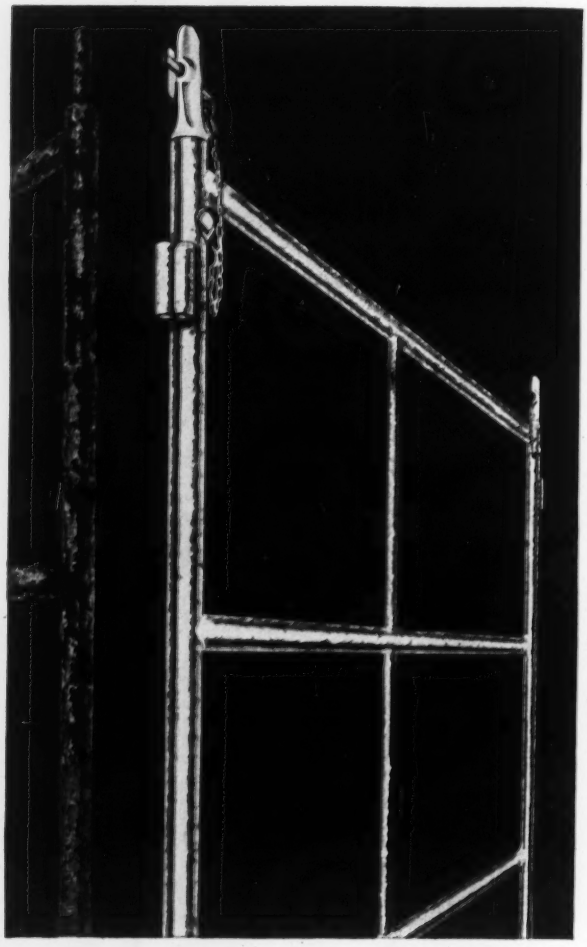

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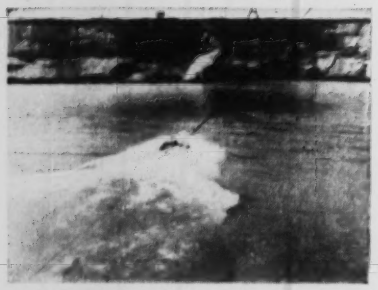

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Reader Comment

New Curve Needed?

SIR—Your "Message to American Industry," Engineering News-Record Feb. 2, 1956, p. 63 was indeed interesting due to its one very important omission. Since the name of your publication implies that it is an engineering magazine and probably a large percentage of your readers are engineers, it seems only fitting that a line indicating the income of salaried engineers should have been superimposed on the curves shown on p. 64. Since "American Industry" is also the biggest crier for more engineers, I believe such a notation should be of interest to them.

After reading your article "Tighter Market for Engineers," same issue p. 17, where you indicate that most (not all) of the graduating engineers will probably be able to obtain salaries equal to last year's top technician salary, it is my belief that "American Industry" perhaps has a little remodeling to do at home before venturing into outside activities.

T. E. FALEY
Harrisburg, Pa.

Old Tests Explain Failures

SIR—The article in ENR Jan. 12, p. 21, "Warehouse Failures Pinpointed," and items appearing in previous issues on the same subject have been studied with interest because of some tests made at the Mechanical Laboratories, Case School of Applied Science, Cleveland, under the general supervision of Prof. R. H. Danforth, from about 1922 through 1926.

We had made it a practice to carry top reinforcement full length of continuous beams and, to carry stirrups 1½ times the beam depth beyond the point of contraflexure toward the center of span. When we cut out the top bar in continuous beam tests between the quarter points and terminated stirrups slightly nearer the support than the quarter point, we made a significant discovery when center loads were applied on two continuous spans: The application of a center load produced a constant high shear.

We noted shear failures at or near the point of contraflexure at much lower loadings than were required to produce similar failures in simple, center-loaded beams of the same size without web reinforcement.

We also noted greater shear resistance near the point of central concentrated load on simple-span beams than near the supports. Here, we are not referring to the zone directly under the load, but to an area at least 1½ times the beam depth away from the point of application.

From these test observations, we drew the conclusion that compression due to moment in a large portion of the concrete cross section increased the shear resistance; i.e., the higher the average compressive stress, the higher the shear capacity. Since there is appreciable moment near the end of a simple beam, the resultant compressive fiber stresses aid in increasing shear resistance. In like manner, the high compressive stresses at the support of a continuous beam give a correspondingly higher internal resistance to sliding or pulling apart by diagonal tension.

We also made a short series of tests to determine the best location for the bend where a negative-moment bar is bent down so as to become a positive-moment bar in the center of the span. The customary practice was to extend the second straight upper bar toward the center of the span, past the point of bending the first bar. It was observed that cracks opened up on the bottom of the beam on the side of the bar bend toward the center of the span. When the bend in the bar was moved toward the center, these cracks did not form unless much higher loads were applied. We felt that by moving the bend outward, we tended to establish a point of contraflexure and at the same time shorten the positive-moment, or suspended portion, of the span. Apparently, there are some characteristics of behavior of a composite non-homogeneous structural member still not fully understood, especially in zones of reversal of moments.

In any event, as a result of our tests, we continued to run our top bars full length of our units and used stirrups well out beyond the quarter point of continuous beams.

Perhaps it is in order to suggest that the appropriate committee of the American Concrete Institute should

(*Continued on page 14*)

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

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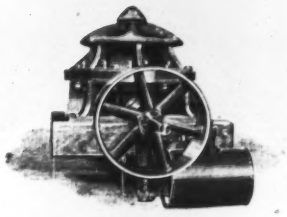

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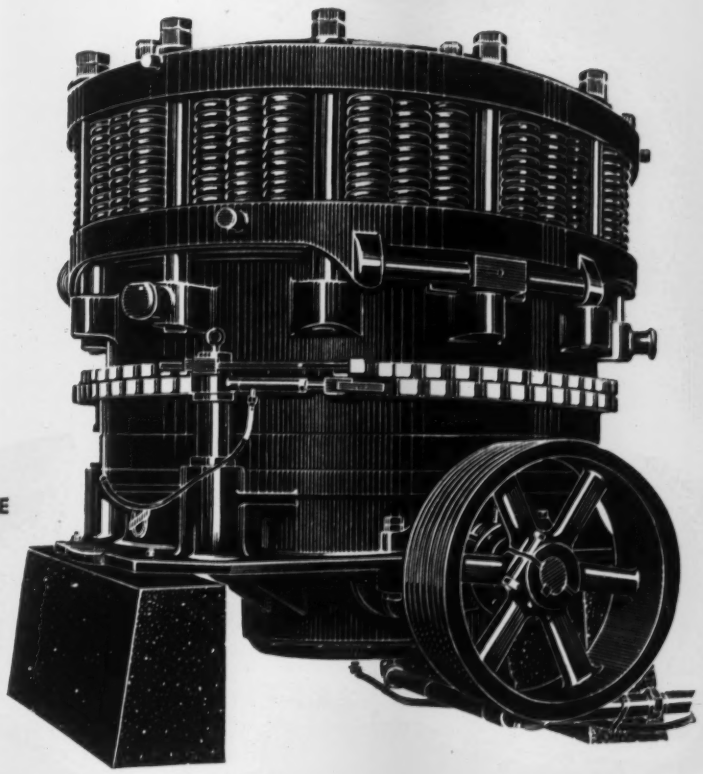

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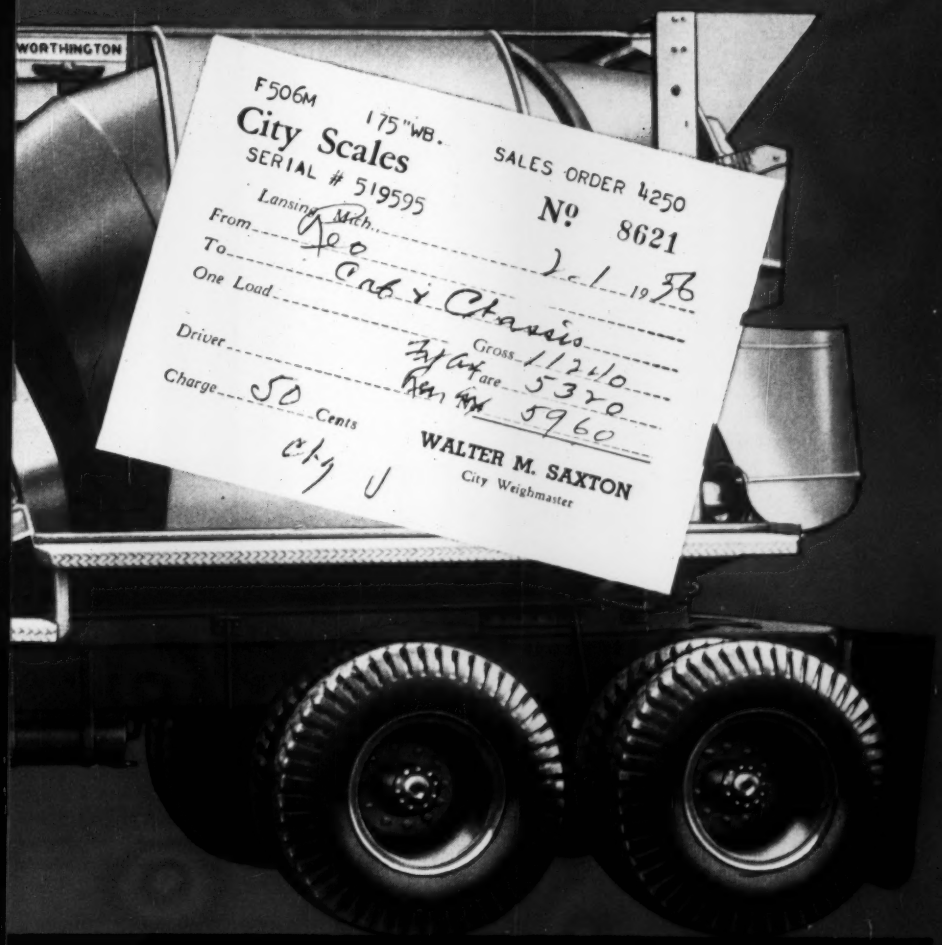
Reo's exclusive *front-axle-payload* design places more weight forward—giving you an extra 2 cubic yards of concrete every trip. With it, you can haul your regular daily volume with fewer trucks and drivers . . . or increase volume without increasing your fleet.

For states that permit greater axle loadings than 32,000 lbs., Reo builds the F-536M—52,000 lbs. G.V.W.

Additional hundreds of pounds can be added to the carrying capacity of the new Reo F-506M with Reo's optional front-end power take-off. The PTO also eliminates extra fuel and maintenance costs of the mixer's auxiliary power unit.

Call your Reo branch or distributor today and get the facts on the Reo that's right for you. Mail the coupon for full information.

32,000 lb. TANDEM LIMIT



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Please send at once:

☐ Complete Specifications on F-506M. ☐ Reo Front-End Power Take-off. ☐ New Tandem Catalog.

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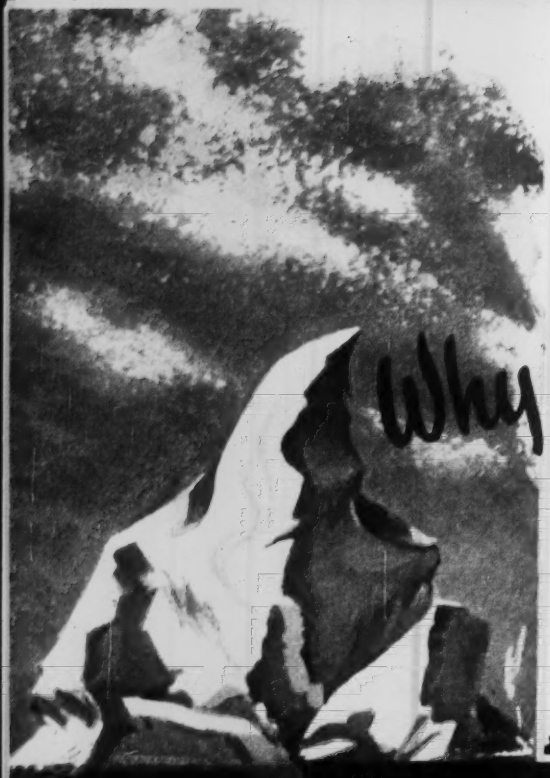

AN EXAMPLE OF GEOLOGICAL ENGINEERING BY MANU-MINE

Why is a highway...

LIKE AN ICEBERG?*

The question is far from facetious. If the parallel were more widely recognized, there'd be better roads. For in either case, the part you see is by far the smallest, the least important. It's what's *below* the surface that causes trouble.

For this reason, more and more highway authorities are turning to the men of Manu-Mine to determine sub-surface conditions by geological survey before new highways are built—and to *correct* unstable conditions by Manu-Mine's exclusive methods.

By injecting chemicals into water-bearing sub-surface soils—even quicksand—Manu-Mine converts them instantly and permanently into solid masses with the load-bearing value of native sandstone.

Manu-Mine methods proved successful on highways and turnpikes where water was a major problem in the sub-grade. They have proved equally successful on tunnels, dams, reservoirs, buildings and mines. Manu-Mine methods have been applied throughout the world both *before* construction and *after* its completion—even after damage has commenced from initially inadequate foundations.

Like more information about Manu-Mine's geological engineering services and soil solidification process? We'll be glad to send it to you on request.

GEOTECHNICAL PROJECTS:
Geology and geological engineering, geophysics, geochemistry, soil mechanics and soils testing.

FOUNDATION ENGINEERING:
Soil stabilization, water control, ground-bearing support.

SOLID SOLIDIFICATIONS:
Stabilization of foundations, control of water in tunnels, solidification of fluid soils.

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Shaft-sinking and tunnel-driving, ventilation, mine evaluation, roof control, development, fire control.

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Special studies in geology and surface stability, sub-base stability of road slabs.

NUCLEAR RESEARCH:
Research and radioactive waste disposal, agricultural problems and nuclear energy.

RESERVOIRS:
Rehabilitation and construction. Storage of liquids in open and underground pits.

MANU-WALL CONSTRUCTION:
Retaining walls, damsites, viaducts, and other construction relating to the control of water.

CERAMICS:
Research for the ceramics industry. Studying special problems for the brick and the clay industries.

* *About nine-tenths of an iceberg is below surface. The ratio is vastly greater with a road—and the composition of a road's sub-surface portion, unlike the berg's, cannot be intelligently surmised from the part that's seen!*

MANU-MINE
Research & Development Company
Reading, Pennsylvania

MANU-MINE

sponsor a series of tests to evaluate the shear or diagonal tension values of unreinforced concrete beam webs in zones where moments or bending stresses are almost, if not altogether, non-existent.

G. G. Greulich
Consulting Engineer
Pittsburgh, Pa.

Straight Streams

Sir—In Reader Comment (ENR Feb. 16, p. 10) the letter by Frank D. Steiner, civil engineer of Orinda, Calif., is a welcome contribution to the effort now being made for comprehensive water supply and flood control programs.

I believe that all governing bodies, lawyers and engineers should read, from cover to cover, the recently issued Report by the Presidential Advisory Committee on Water Resources Policy.

It seems to me that we are now brought squarely face to face with such questions as: Should the time honored principle of "straightening out" streams for faster flow be modified?

Mr. Steiner's comments make the situation crystal clear. I agree with them.

Fred D. Farrington, Jr.
Trenton, N. J.

CALENDAR

American Institute of Steel Construction, Eighth Annual National Engineering Conference, Lehigh University, Bethlehem, Pa., April 4-6.

Western Association State Highway Officials Conference, Phoenix, Ariz., April 10, 11, 12, 13.

Construction Specifications Institute, ninth annual meeting, Architectural League, New York, N. Y., April 19.

Purdue Industrial Waste Conference, Purdue Memorial Union, Lafayette, Ind., May 15-17.

American Institute of Architects, annual convention, Biltmore Hotel, Los Angeles, Calif., May 15-18.

Prestressed Concrete Institute, second annual convention, Hollywood Beach Hotel, Hollywood, Fla., May 16-18.

Society for Experimental Stress Analysis, spring meeting, William Penn Hotel, Pittsburgh, Pa., May 16-18.

Building Research Institute, annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont., May 21-22.

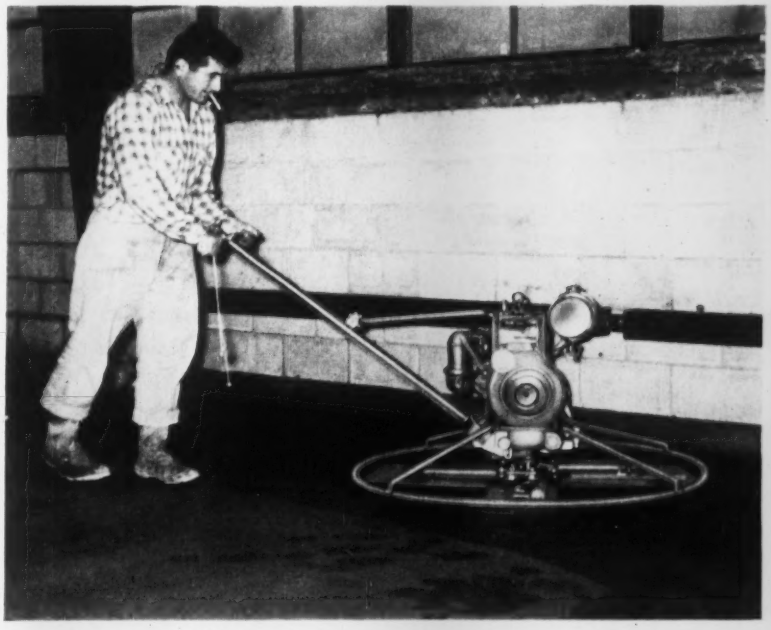
National Society of Professional Engineers, Ambassador Hotel, Atlantic City, N. J., May 23-26.

Materials Handling Exposition, Cleveland, Ohio, June 5-8.

World Conference on Earthquake Engineering, University of California, Berkeley, June 12-16.

Concrete Finishing News

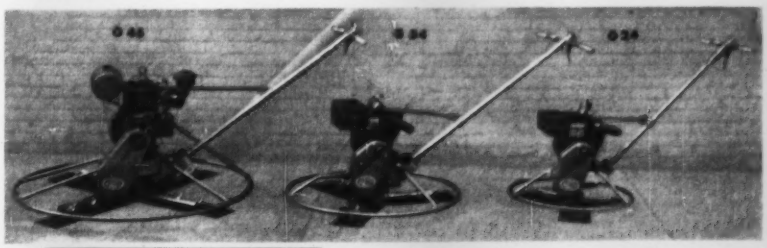
by STOW Mfg. Co.



On big concrete finishing jobs, it is important to know that the STOW G-46 Roto-Trowel will finish 5 more square feet per revolution than the G-34. This means that the G-46 can get the job done twice as fast. Notice that the G-46 Roto-Trowel has 4 blades for extra-smooth trowelling. It has many important safety features, among which is the fool-proof, dead-man clutch control on the handle that stops the blades from rotating the instant the operator releases pressure on the handle; a rugged, non-rotating guard ring lets you work up to and around walls and other obstructions.

When you strike off concrete, you can save money by using the STOW Vibrating Screed. You can use a denser, dryer concrete, which means that trowelling can be started sooner.

For more information on STOW'S trowels and screeds, write today!



STOW MANUFACTURING CO.
19 Shear St., Binghamton, New York

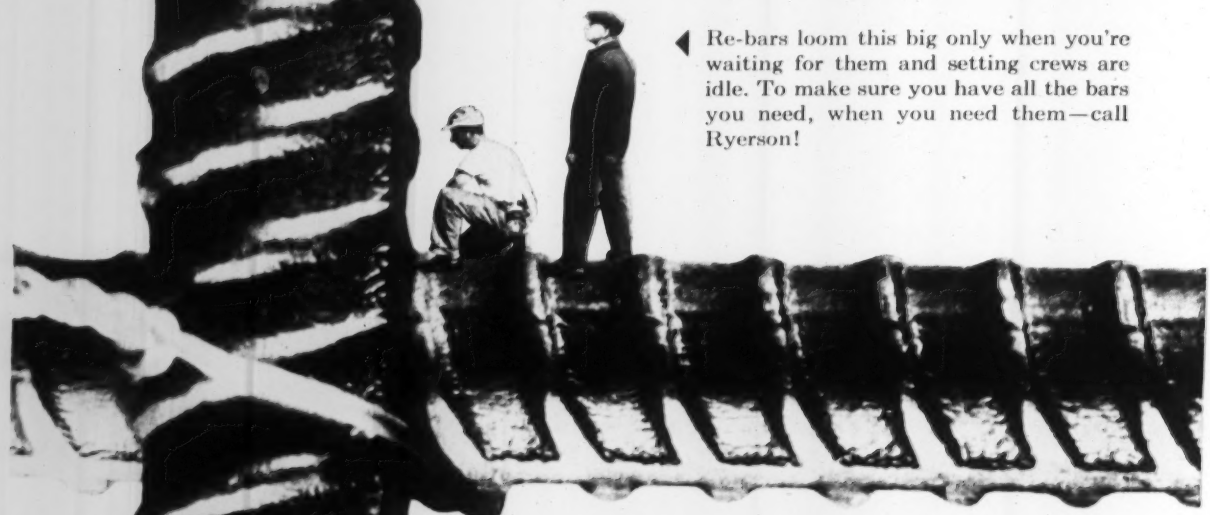
ARE YOU GETTING

this 4-point service on re-bars?

Contractors say there are four reasons why they keep coming back to Ryerson for rebars:

1. Tremendous stocks to supply any job, large or small.
2. Dependable fabricating service to meet the toughest, tightest schedules.
3. Setting plans and accurate bar identification to make placement quick and easy.
4. Deliveries always on schedule—to the day *or* even *the hour* you specify. Yet never too early, so that steel piles up on the site.

Contact your nearest Ryerson plant for a lump-sum or average-pound quotation on your **next** job. You'll save time and money, too, by ordering all your other construction steel requirements from Ryerson.



Re-bars loom this big only when you're waiting for them and setting crews are idle. To make sure you have all the bars you need, when you need them—call Ryerson!

RYERSON STEEL

In Stock—Re-bars & Accessories · Spirals · Wire Mesh · Open Web Joists
Forms For Concrete Joists · Tubing · Structurals · Safety Plate · Stainless
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ENGINEERING NEWS-RECORD

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CONTENTS

NATIONAL AFFAIRS

Priest Rapids Bid Sets Record 21
AGC States Position on Davis-Bacon Act 21-22
Los Angeles Accepts Incinerator 22
Ohio Turnpike Has Trouble With Truckers 23
Long Trestle to Be Replaced 24
Hopes for Big Pollution Plan Fade 25
Authority Accepts American Cyanimid's Sewage Service Offer 25
Busy Winter at Hell's Canyon 27
Flood Warnings Set for New England 27
$7 Million for Fish Protection 28
Tardy Movers Slow Work on Connecticut Turnpike 30

FEATURES

Water Bargain Sale Scheduled for July 33
Aquatic Criminal Under Arrest 35
Timber Hangar Withstands Fire 39
Light-Steel Double Dome Roofs an Auditorium 46

NEW PRODUCTS

Automatic, Vibrationless Compressor 48
Wedge Grip Anchors Prestressed Bars 48
Dual-Tank Agitator Feeds Mix to Gun 51
Electronic Thinker Fits Desk Space 51
Scaffold Changes Angles to Squeeze Through Doors 54
Insulation Rolls on Hot, Sets Fast 56
Sheet Metal Expands to Form Built-in Tubes 58
Publications 60

INTERNATIONAL

India's Capital City Mushrooms 63

MEN AND JOBS

Thorndike Saville: The Man Behind Engineering's Self-analysis 67

BUSINESS AND FINANCE

The Longer Look 106
San Francisco Transit Plan Termed Feasible 109
Industrial Expansion Zooms 109-110

LABOR

Strike on St. Lawrence Is Settled 112
One Hurdle Remains in Western Teamster Dispute 112
New Rates for Some 114
Canadian Province Faces Shortage of Electricians 114
GAW Payments Have Won Required State Approval 114

Reader Comment 10
Calendar 14
Washington Observer 19
Obituaries 72
Construction Reports 75
Unit Prices 101
Materials Prices 102
Construction Scoreboard 104
Activity This Week 104
Editorials 128

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

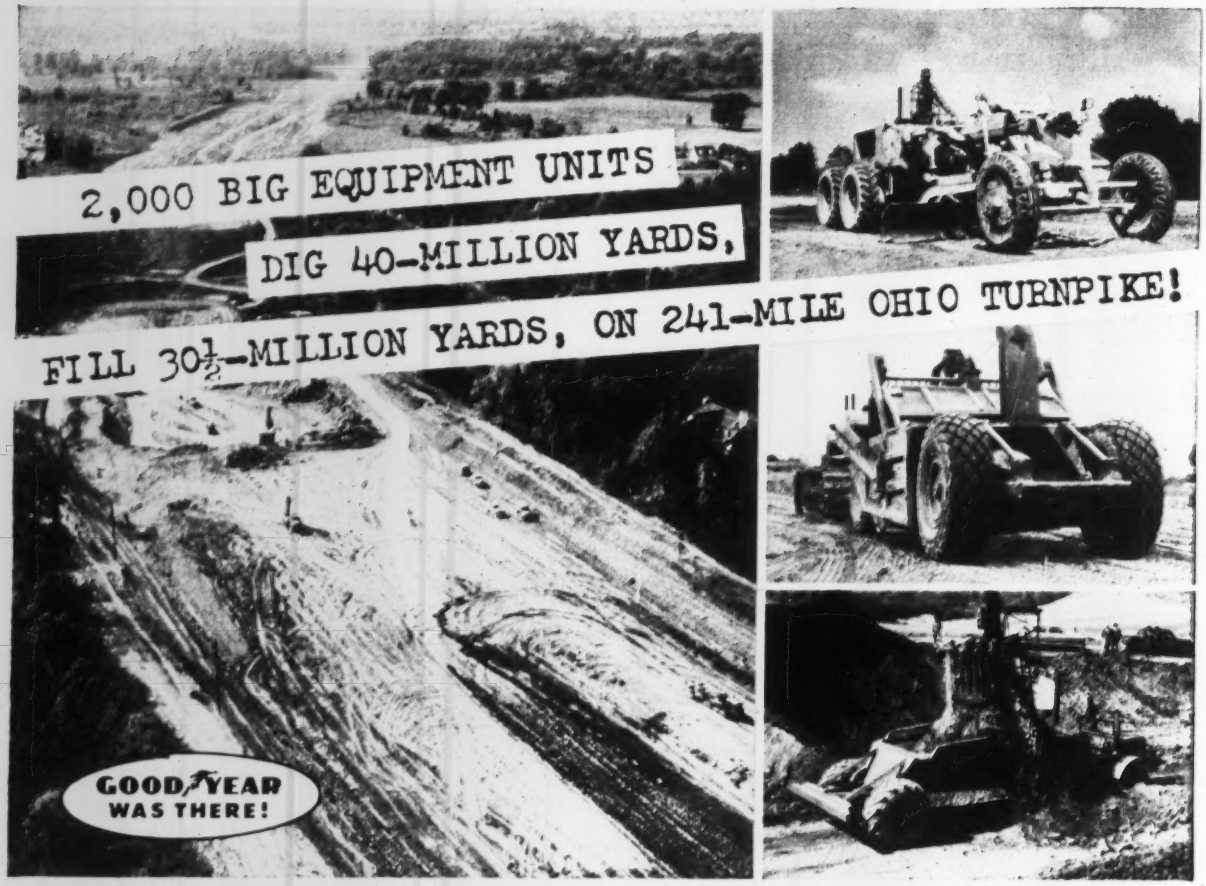
THE CONSTRUCTION WEEK

FAST BREAK—It wasn't long after the House had approved the great Upper Colorado River Project that the Bureau of Reclamation's top field men were being alerted to their coming responsibilities by Commissioner W. A. Dexheimer, a construction man himself. Called to Denver for the Bureau's Fourth Construction Engineers' Conference March 12 the men were told of the job ahead in building Glen Canyon, Flaming Gorge, Navajo and Curecanti Dams, and were assured by the Commissioner that "We have the organization to handle it. From a high point of 16,000 employes in 1950, we have streamlined our organization to a total working force of 9,000. We believe we have one of the most efficient operating agencies in the government, and we intend to keep it that way."

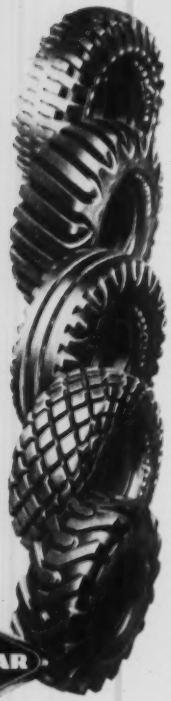
WHY EGYPT DELAYS—In spite of all the world politics being read into Egypt's announced postponement of its $1.3-billion Aswan High Dam, the real reason for delay is announced: Accord must be reached with the Sudan on Nile River control. The Sudan was not a party to the 1929 Nile Waters Agreement between Egypt and Great Britain, but now things have changed. The condominium is no more; the Sudan is a free country; and the Sudan wants changes in the Nile Waters Agreement. The Sudan wants its ultimate share in flow of the Nile established before any construction begins and also wants compensation assured for the homes of some 50,000 Sudanese said to be within the reservoir Aswan High Dam would form. This is Premier Nasser's problem—and the reason for the announced delay.

CALIFORNIA'S WATER NEEDS—A $13-billion price tag has been put on full development of water resources in California. Some 260 reservoirs would be involved. This much of a preview of the California Water Plan—expected to be completed by summer—was released this week to impress the current special legislative session. The legislature is hopefully expected to create a separate State Department for Water Resource Development and to vote initial funds for the $1.5-billion Feather River scheme.

PLANETARIUM FOR AIR CADETS—The Air Force Academy at Colorado Springs will have a planetarium, capable of depicting the movements of more than 3,000 stars. The $200,445 structure, seating 280 students, will be equipped with a high-fidelity sound system. Star images will be projected on a 50-ft-dia dome. A 12-ft projector will show a day's movement in the heavens at speeds of one to 10 minutes. Spitz Laboratories, Yorklyn, Del. has the contract for the structure.



Humming to the tune of 30,000 vehicles a day, Ohio's new 241-mile toll road, of twin 24-foot pavements on 200 foot right of way, took less than 3 years from start to finish! This fast-stepping 20-hour-a-day pace was maintained by equipment drawn from all over the country—much of it rolling on Goodyear earth-mover and off-road tires built with 3-T NYLON Cord.



Look for this sign; there's a Goodyear dealer near you

YOU set the pace —
TIRES OF 3-T NYLON CORD CAN TAKE IT!

Tires built with Goodyear's *exclusive*-process 3-T NYLON Cord have been on the toughest, fastest-moving jobs for almost 2 years. In that time, they've proved themselves *the greatest moneysavers for truckers and contractors in 20 years!* 3-T NYLON CORD keeps bruise breaks and heat blowouts close to the vanishing point, virtually eliminates ply separation and flex failure—keeps tires in shape for many more re-lugs and recaps. If you want to cut your tire-cost-per-job, specify Goodyear 3-T NYLON Cord tires—conventional or tubeless—for everything that rolls! Goodyear, Truck Tire Dept., Akron 16, Ohio.

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE BUILT WITH 3-T NYLON CORD

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Road Lug, Sure-Grip, All-Weather—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

WASHINGTON OBSERVER

Administration officials are feeling better about the housing outlook. The latest figures indicate a definite upturn after several months of a decline that gave them a lot of worry (see page 106).

The signs of an upturn show in two significant sets of figures:

Actual housing starts have turned upward. The February starts were at an annual rate of 1,200,000, a modest increase over the January figure. But the turnup is the first since the decline set in last summer. For the first two months, though this year is below last year's figures which ran at the rate of about 1,400,000 for the same months. The year ended with 1,300,000 units started.

But requests to VA and FHA for advance commitments are up, too—and more than seasonally. These advance requests are taken as evidence that builders' plans for the months just ahead are larger than many were expecting as recently as six weeks ago.

•

Brochures and forms on post office lease-purchase projects will soon be available in the Post Office Department's 15 regional offices.

Bid invitations on four or five buildings will be out next month according to present plans. This is the first bit of business on a program for which Congressional committees have approved 27 buildings to cost about $14 million.

The Post Office Department will contract for 3,500 buildings costing $230 million by 1960, Postmaster General Summerfield says. All this construction will be privately financed, either through lease-purchase or through the department's long-term lease program.

•

McKay will defend the Administration's position on partnership financing of federal hydro projects. The role of federal vs. non-federal construction of all or part of multi-purpose projects that include power will be the big issue between McKay and Senator Morse, the most vigorous critic of these policies.

McKay will leave Washington next month to begin campaigning. His departure forecasts no change in Interior Department policies.

•

The military's $2.1-billion construction program sailed through the House Armed Service Committee last week.

Biggest change was the restoration of a Navy airfield for jets to be built near the Naval Academy at Annapolis. It would cost about $4 million.

Pressure for cuts is almost nil. In fact, keep your eye on Senator Symington. He is out to show that the Administration has been holding down spending to get a balanced budget.

The authorization approval means that the appropriation requests will be coming along soon in the Appropriation Committee.

•

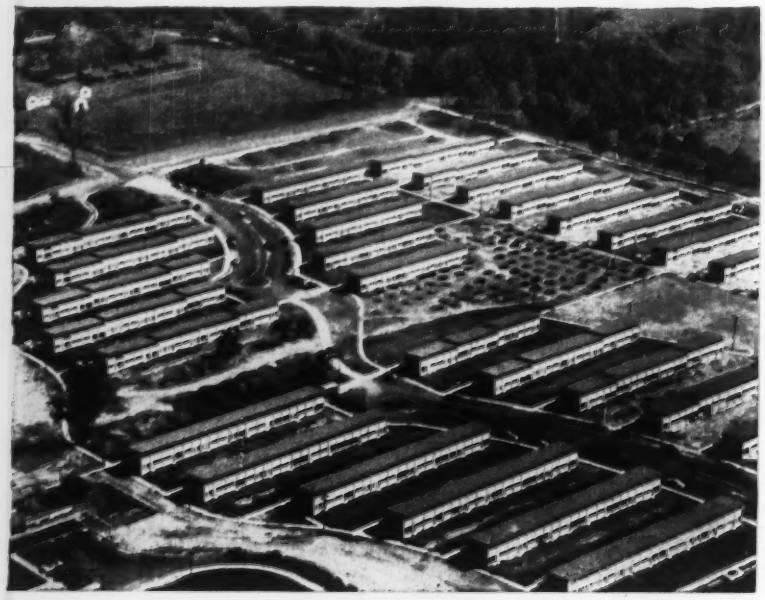
Construction notes from Congress and elsewhere:

TVA can begin building a $28-million turbine-generator unit to be added to its John Sevier steam plant, if the House Appropriations Committee has its way. It directed TVA to use power revenues. Republicans claim this is illegal.

Arkansas River Basin projects totaling nearly $400 million are getting another chance at the White House, due to Congressional pressure. The President's budget had no money to start them.

Housing Milestone

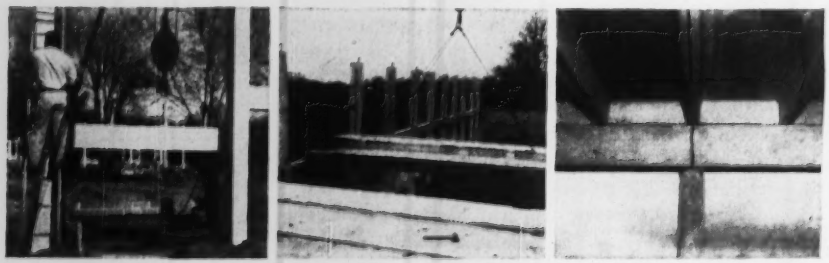
Precast 'Incor' Concrete Framing Cuts Erection Time and Cost on Big Philadelphia Housing Project



● Philadelphia, City of Homes, writes a bright, new page in the record of low-rent housing progress by providing comfortable, fire-safe dwellings for 412 families in its 500,000-sq.-ft. Liddonfield Housing Project, at a cost of less than $8. per sq. ft. of floor area.

Use of precast 'Incor' concrete columns, floors and roof decks for the 52 two-story buildings made possible assembly line speed in erecting the 20-ft.-wide units, ranging in length from 150 to 200 ft., at the rate of two a week.

All units were fabricated with 'Incor' 24-Hour Cement for fast, economical production and erection. You *know* what 'Incor'* will do . . . always dependable high early strength fits into well-scheduled, assembly-line production, assuring maximum output from the form investment . . . smooth-working mixes speed placing, improve appearance . . . sound reasons for insisting on America's FIRST high early strength portland cement. *Reg. U.S. Pat. Off



First step is erection of two-story columns and spandrels. Next, 3-ft.-wide precast floor channel slabs are placed across building's full width. Right, under side of floor—smooth concrete surfaces only require painting.

PHILADELPHIA HOUSING AUTHORITY
LIDDONFIELD HOUSING PROJECT

Architects:
LIDDONFIELD ARCHITECTS OF PHILADELPHIA

Civil Engineers:
BARTON & MARTIN
Philadelphia

General Contractor:
STOFFLET & TILLOTSON
Philadelphia

Precast Members Made and Erected by
FORMIGLI CORPORATION
Berlin, N. J. • Philadelphia, Pa.

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Bid for Priest Rapids Work Sets Record

$91-million single bid is highest ever awarded but still 25% under estimate

The greatest dollar volume of construction ever advertised in one piece for competitive bidding drew a whopping low bid of $91,878,625 last week for Priest Rapids Dam and powerhouse on the Columbia River.

It was whopping because—in dollars—it nearly doubled any earlier big dam contract; it was remarkable too because despite its size, it cut the engineer's estimate of $125 million by over 25%; and, not at the least of all, it was impressive that no joint venture, but a single firm submitted the bid.

Merritt-Chapman & Scott Corp. of New York was the low bidder.

Grant County PUD No. 2 of Ephrata, Wash., is to be the owner of the $360-million Priest Rapids Project (a "partnership" project formerly authorized for Corps of Engineers construction). Harza Engineering Co., of Chicago, is the owner's consulting engineer.

The total $360-million project, upstream from McNary Dam, will provide 1,200,000 kw and will include also Wanapum Dam as a separate unit.

Priest Rapids Dam itself will be a concrete and earthfill structure 8,825 ft long and 175 ft high, creating a 78-ft maximum head. Eight 75,000-kw generators will be installed initially.

• Five bidders beat the estimate—All five bidders on this record piece of construction were under the engineer's estimate: Kaiser Engineers, $92.1 million; Guy F. Atkinson Co., $97.5 million; Morrison-Knudsen Co., $104 million and JTM Constructors, Charlotte, N. C., $108.9 million. All but the low bidder were firms representing joint ventures. MC&S did not submit its bid in combination with anyone.

Grant County PUD gives these as its reasons for wanting to award the Priest Rapids, including all equipment, as a single contract:

• It's easier and more economical. The PUD is a small organization and believes it can better control a single large contract than several smaller ones. And it believes it got a lower total price than it might have by holding back part of the work and risking price changes.

• It helps in financing work, to know what the project will cost.

Only objection to the single contract plan came from generator manufacturers who wanted separate bids on generators.

E. Montford Fucik, executive vice president of Harza Engineering Company, offered these reasons for the relatively large differences between the bids and the engineer's estimates.

The influence of foreign competition on prices for generators and turbines was greater than anticipated. Low bid prices were $7 million less than estimates—based on preliminary quotations from U. S. manufacturers—for turbines and $10 million for generators. The engineers had also allowed for escalation clauses to cover possible increases in materials and labor while the low bid prices were firm.

Bonus and penalty clauses apparently had a significant effect. Specifications set up a bonus of $1,300 per day per generating unit (there are eight units) for early completion and a penalty of $3,000 per day per unit. The three lowest bidders scheduled the contract for completion about one year in advance of the 1,900 days allowed. Thus, the contractors appear to have banked on the bonus money in greater amounts than the engineers anticipated.

Lumping construction with procurement and installation of generating equipment in one contract, according to Fucik, appears to have been a third factor acting to depress bid prices. Magnitude is difficult to estimate, but at least there was no increase in bid prices, Fucik felt.

Lastly, the large number of bidders for a contract of this size indicated great interest among the contracting fraternity which was reflected in lower bid prices.

In commenting on the small range of bids, Fucik said that this indicated a good understanding of the intent and requirements of the plans and specifications by the contractors.

Earlier big contracts on dams, which must be judged in relation to the changing value of the dollar, include:

Hoover Dam (1931) $48.9 million.

Hungry Horse Dam (1948) $43.4 million.

Shasta Dam (1938) $35.9 million.

Grand Coulee (1938) $34.4 million.

Chief Joseph Dam (1952) $39.9 million.

All of these went to joint ventures, contracting combines.

AGC States Position On Davis-Bacon Act

Contractors would exclude prevailing wage clauses from federal highway bill

General contractors last week gave the press their reasons for opposing inclusion in the Fallon highway bill of Davis-Bacon requirements for federal determination of prevailing wages to be paid on each project of the 40,000-mi, $27.5-billion interstate construction program.

At the same time the contractors explained their opposition to other bills before Congress to extend application of the Davis-Bacon Act to every construction project in which the federal government is involved. These jobs go beyond those to which the federal government gives a percentage of financial assistance. They would include even lease-purchase projects financed entirely by private money under builder-investor contracts by which the federal government eventually acquires title to the building by making monthly payments, like rent, over a term of years.

Aroused by the publicity given to the position taken by the AFL-CIO building and construction trades which favor these proposed bills, the Associated General Contractors of America invited Washington correspondents of national business and construction papers to a luncheon session to hear the other side of the issues. With Lester C. Rogers of Bates & Rogers Construction Corp., AGC vice president and legislative committee chairman, at the head of the table, the press people heard AGC's position explained by him and by members of the headquarters staff.

Touchiest and toughest battle at the moment is over threatened extension of U. S. Labor Department wage-setting powers for the first time to federal-aid highway contracts awarded and supervised by the states.

Contractors as a body oppose this extension of Labor Department authority for a number of reasons. They charge that confusion, uninformed administration, impediments, delays and higher construction costs would ensue to the disruption of both local collective bargaining and handling of jurisdictional conflicts.

AGC officials note that since 1948, controversies between differing AFL

construction trades unions—over what kinds of work come within the jurisdiction of specific crafts—have been resolved effectively and smoothly, on the whole, by the National Joint Board for Settlement of Jurisdictional Disputes. This board, headed by an impartial chairman, with equal representation from the AFL-CIO Building and Construction Trades Department on the one hand and the general and specialty contractors on the other, has made a reputation that wins unstinted praise from the National Labor Relations Board.

AGC officials say that if the U. S. Labor Department moves into the peaceful highway scene and begins its necessarily clumsy, centralized, pressure-ridden assignment of trades classifications for each road job with accompanying determination of prevailing wages for each of the multiple crafts involved—dislocation and destruction of the existing, effective procedures are sure to result.

Existing laws and regulations in 30 states, which set prevailing wage rates on each highway project and thus establish minimums below which the successful bidder cannot go, would likewise be abrogated for federal-aid construction jobs on the main interstate network. This change would take minimum wage determinations away from the state highway departments who know local conditions, AGC says, and lodge the decisions with a federal agency that has to act under the heavy handicaps of incomplete knowledge and political pressures in the nation's capital.

At present, 25 states have laws requiring the listing of prevailing wage rates in the proposal for every highway project, and five additional states furnish minimum wage rates—administratively predetermined—to all prospective bidders. In fact, the prevailing wage laws apply to all public works contracts, including federal-aid highway contracts, that have been awarded by the states.

General contractors say their experience is that wage determinations by the states are more solidly based on intimate knowledge of local conditions than is possible for determinations by the U. S. Department of Labor.

If Davis-Bacon requirements are written into federal-aid highway legislation, the department, acting as the patron and protector of labor, would, the contractors fear, have to go to the nearest metropolitan center, maybe 50 to 200 mi or more from the project, and would almost certainly have to specify prevailing wages for 15 to 19 trades that might possibly be employed on the job.

This multiplication of possible trades to work on the project would break down present agreements between the four principal construction trades unions and the highway contractors. These agreements, made with local unions to cover surrounding areas, permit members of the operating engineers, carpenters, teamsters and laborers organizations to perform all the odd jobs required in building a highway project.

For these reasons, the AGC says that any requirements written into federal-aid legislation should specify that prevailing wage rates for each project be determined by the states—not by the federal government.

Not everything the AFL-CIO leaders want runs into contractor opposition, however. The AGC, for example, is on the same side as the unions when it comes to amending Davis-Bacon to require payment of overtime for work in excess of 40 hours a week and for work on Saturdays, Sundays and holidays.

How the Highway Bill Looks Now

The House Public Works Committee is shooting for April 9 as the date for getting the federal highway bill onto the House floor. It will join the Boggs tax bill—setting up a 16-yr, $38.8-billion highway construction fund—and the Fallon authorization bill into a single package for House action. The measure will be offered on a take-it-or-leave-it basis with no further amendments. It will be up to the Senate to debate issues that are still of a controversial nature.

Here's the way the bill shapes up in its essential points as it emerges from House subcommittees and committee action:

• Fallon's original authorization remains the same; a 40,000 mi interstate system on a matching basis of about 90-10, plus continuation of traditional 50-50 matching basis established for primary, secondary and urban roads.

• Reimbursement for toll highways has been bypassed by providing that the Secretary of Commerce conduct a study with state highway departments of the proposal that allowances be given for turnpikes built since Jan. 1, 1947. The report to Congress is due by Jan. 1, 1958.

• Payment for relocating utilities stays in the bill with the provisio reading that the federal government can pay up to 50% of relocation costs as long as they are not in excess of 2% of the total cost of the project.

• Size-weight restrictions on big trucks have been retained. States wouldn't be able to increase them after the bill goes into effect without becoming ineligible for federal money—unless Congress lifts the ceiling.

• The Davis-Bacon amendment stays in the bill **(see p. 21).**

• A new provision would enable the federal government to guarantee state-issued bonds to finance roads, bridges or tunnels that are declared supplemental to the interstate system by the Secretary of Commerce.

Incinerator Okayed

After accident and delay, 400-ton unit goes to work

The Los Angeles Board of Public Works has accepted another completed incinerator—a long awaited 400-ton unit. U. S. Fidelity & Guaranty Co., bond holder for a defaulted contractor, finally completed the rubbish incinerator on Lacy St. near the downtown area.

Only recently the public works board accepted a 100-ton-a-day unit in the Harbor Area at a reduced figure because it didn't completely pass smog tests (ENR Feb. 16, p. 42). The Lacy St. incinerator passed all required tests but the unit must still operate successfully for a year.

The big new unit has been beset by troubles since construction started in 1946 (ENR Dec. 12, 1946, p. 109). First operations in 1947 resulted in an explosion of trapped gases injuring five workmen. Renovations gained acceptance for the original contractor, but less than a year later the plant was found incapable of operating at its design capacity. And the unit was also found to be emitting ash and air pollutants.

After a study by Greeley & Hansen, Chicago consulting engineers, bids were called for a second renovation of the incinerator. A contract was awarded in August 1951, calling for completion in September 1952. For failure to proceed with the work, the holder of this contract was declared in default and the bonding company assumed responsibility for completion.

The city, with fingers crossed, is still retaining $110,000 of the $500,120 due on the renovation contract, pending minor improvements still being undertaken. Then the year's guarantee stipulates an 82-cent-per-ton operating cost. During three months of pre-acceptance performance tests the unit successfully met the operating cost figures as well as strict smog control tests and a guaranteed burning rate of 16⅔ tons per hour. Total cost of the unit including original construction is nearly $1.3 million. The incinerator will be available for public use at a $2.00 per ton rate.

No immediate toll cut due even though . . .

Ohio 'Pike Has Trouble With Truckers

A few days ago, the Ohio Turnpike Commission met with representatives of the trucking industry to take up the pressing problem of toll rates on the 241-mi turnpike across northern Ohio.

No verbal punches were pulled. Trucking companies insisted that toll rates are too high and that it costs them more to run their vehicles across the safety-engineered turnpike than to use the state's free roads. Their solution: Revision in nine weight classifications and a discount of as much as 20% for volume use.

The commission, however, indicated that it doesn't want to be pressured into lowering its toll rates. It believes that as much as a year's operating experience is necessary to determine reasonableness of rates and need for revision.

The conference produced no visible results as far as the rate revision question goes. Any change in fees—even if it is authorized—wouldn't take place until midsummer. But the commission did decide to start a searching study of tolls from every angle and include passenger cars as well as trucks.

Are trucks being driven from the turnpike by exorbitant toll charges? The financial fact is that truck revenues on the $326-million turnpike have been disappointing. Truck tolls were forecast at more than $13.3 million for the initial year of operation. But they totaled only $4.1 million during the first four months—October through January.

It was also estimated that during the first year passenger cars would travel 425,000,000 mi on the turnpike and trucks, 340,000,000 mi. In the first three months, cars actually traveled 138,000,000 mi while trucks accounted for only 21,000,000 mi. But there are two encouraging factors in the situation. Passenger car traffic to date is about 150% of engineers' estimates. And truck traffic—after the slow start—has shown good gains both in December and January when related to monthly traffic percentage factors.

• **The truckers story**—One case history showing the actual expense of operating over the turnpike was told to the commission by Motor Cargo, Inc., of Akron. Operating vice-president Earl E. Sowers gave these figures: For the entire month of January Motor Cargo earned a net of 3.44 cents per mile, but 90% of the mileage was traveled over public highways. "If we had paid the Ohio Turnpike rate throughout we would have had a margin of only 3 mills a mile. We can't operate on that."

This is how Sowers explained expenses. Motor Cargo operated 15,457 units over the toll highway in the period October through February and paid $77,570 in tolls. The average cost was 5.76 cents per mile. Even after deducting the 1¼-cents-per-mile axle tax on public highways—plus three-fourths of a cent estimated difference in maintenance costs—traveling by turnpike still cost the firm 3.41 cents per mile more than using public highways.

One major reason cited for trucks using Ohio's free roads is that most truck drivers are paid on a per job basis. And this means that truck owners don't gain an economic advantage in terms of labor cost if they save a few hours by using the turnpike. Truckers concede there are ultimate savings in maintenance as well as wear and tear and safety—but these are difficult to evaluate cost-wise.

• **The commission viewpoint**—There was another side of the picture that emerged at the conference:

"The five-month record through winter months is not conclusive. Nothing can be done until completion of the study to determine fairness of both passenger and commercial toll rates. And until a decision is reached with bondholders as to whether a lower rate will pay off the bonded indebtedness." This was the opinion of James W. Shocknessy, chairman of the Turnpike Commission. He also asserted that the turnpike will succeed if for no other reason than it is part of what soon will be an 800-mi super highway stretching from New York to Chicago.

"I see no reason to recommend toll rate changes at this time. It is too early to evaluate either operation or time savings . . . too early to determine if a rate adjustment is necessary." This was the viewpoint of Lawrence J. Waterbury, partner in Parsons, Brinckerhoff, Hall & Macdonald, the New York firm responsible for the original traffic-revenue study on which toll rates were based.

"We are not worried about ultimate success of the turnpike." This confidence that present revenue difficulties would be ironed out was expressed by Leland Stoner, president of the Ohio National Bank, trustee for the bondholders.

• **Second Ohio turnpike**—Meanwhile, the commission is awaiting new engineering and traffic-revenue studies on the proposed second Ohio turnpike between Cincinnati and Conneaut. J. E. Greiner Co., Baltimore—working on construction details—and Coverdale & Colpitts, New York—handling the traffic-revenue phase—are expected to have their reports ready by May 1.

The engineers are preparing estimates on both the complete Cincinnati-Conneaut route and on the same routing minus a 45-mi section that extends from near Delaware to near Springfield. If the traffic study indicates this link is not lucrative as a toll road it will be improved as a toll-free part of the public highway system.

As originally proposed, the north-south system would have run 400 mi between Cincinnati and Conneaut and featured a Toledo-Columbus spur. Estimates by J. E. Greiner listed construction cost at $516 million and financing at another $60 million to $80 million. Coverdale & Colpitts then reported that estimated revenue would not be enough to make the entire project financially feasible.

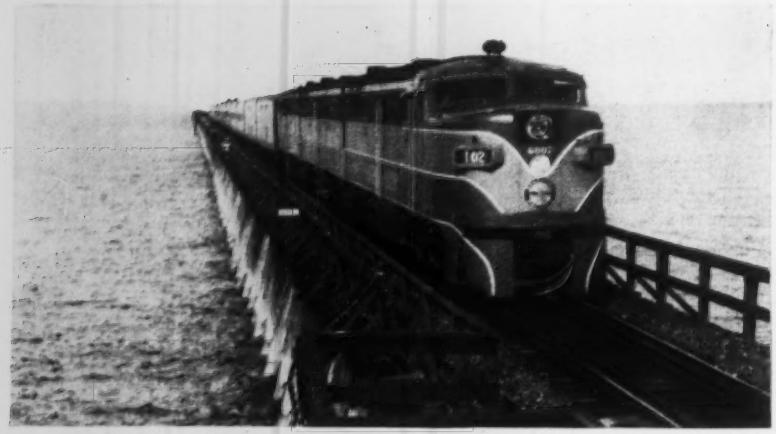
Since the negative traffic-revenue report was issued last November a number of improvisions have been suggested to reduce the project's price tag by $170-200 million (ENR Jan. 12, p. 26). One major change in plans is the elimination of the Columbus-Toledo spur. Instead, the Ohio Highway Department will make extensive improvements on U. S. Route 23 to speed traffic between these two areas.

Goal: Turnpike Teamwork

A four-state conference of turnpike officials has been proposed to deal with problems expected to arise with the opening of 800 mi of toll roads between Chicago and New York.

The session sought by James W. Shocknessy, Chairman of the Ohio Turnpike Commission—would be attended by toll road officials from New Jersey, Pennsylvania and Indiana as well as Ohio. Its goal would be to provide more harmonious relations, more uniform toll charges and better coordination of facilities.

Indiana and New Jersey officials already have accepted the invitation. Pennsylvania has approved the general idea and proposed Philadelphia as the meeting place.



OUTLIVING ITS USEFULNESS, one of the world's largest railroad trestles is slated for abandonment in 1960, when a parallel rockfill embankment will be finished.

Long Trestle to Be Replaced

One of the most ambitious earth-moving operations in the history of Western construction was launched, last week, with the award by the Southern Pacific Railroad of a $45-million contract for dredging and placement of a rockfill embankment across a 13-mi stretch of Utah's Great Salt Lake.

Work to be done under the contract represents the major phase of a $49-million replacement of the trestle section of the 32-mi, 50-yr-old Lucin Cutoff, that "takes railroad trains to sea," shaving 42 mi from the original route that bypassed the lake.

Following a straight-line route, parallel to and 1,500 ft north of the existing trestle, the dredging operation will involve excavation of more than 15,000,000 cu yd of material from the lake bottom. More than 31,500,000 cu yd of rock and gravel will be placed in the embankment, which will be continuous throughout its length except for pass-throughs for small boats.

First steps in the construction were taken last June, with placement of rock by railroad forces in the first of two stages. Award of the new contract to Morris-Knudsen Co., Inc., of Boise, Idaho, spurs the work to a four-year schedule, with re-routed traffic slated to roll in 1960. A work camp for 600 men and their families already is under construction.

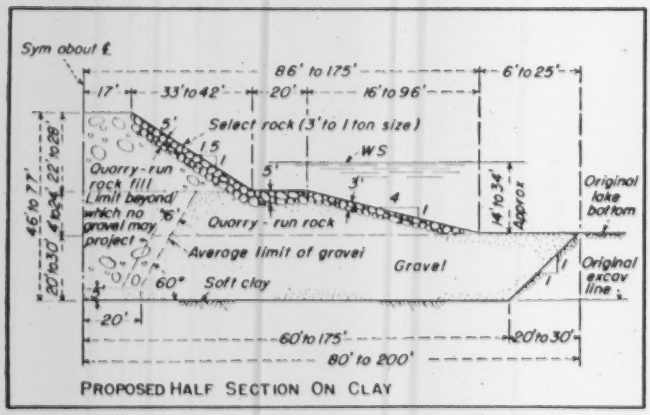
Massive, specially-built excavating equipment will be assembled at the site, and seven barges will be built for movement of 3,000 tons (2,000 cu yd) of fill material per trip. Quarrying will be a shovel and truck operation in which 50-ton trucks will be used to do the hauling.

• **Still in good shape, but**—The trestle structure, called one of the engineering wonders of the world when it was constructed in 1904, is in excellent condition, but its future life expectancy has been estimated at about 25 years. Because decking would have to be replaced within a few years and because the problems of procurement and cost of heavy timbers necessary to do the job are great, construction of the rockfill railroad bed has been under consideration for some time. Test borings and sub-soil analyses dating back to 1953 have been performed by International Engineering Co., Inc., San Francisco, Calif., and on the basis of these, it has been established that the ditch bottom will be generally about 60 ft below the surface of the lake.

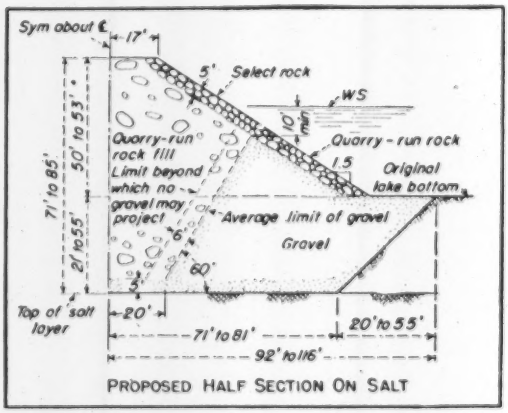
According to the studies, three different bedding conditions occur in the 13-mi stretch. About 2 mi of the route will rest on a thin layer of salt, calling for a tentative design width of fill at the base, as great as 483 ft. Five mi will be placed on deep salt, the most stable of the bedding material, and here the embankment will be about 232 ft across at its widest point. The rest of the route lies on clay, with a maximum proposed width set at 400 ft. Maximum height of the embankment will occur in the deep salt section, where the trench-floor-to-track dimension will be about 85 ft (see drawings).

Relative vulnerability of the existing structure to fire, sabotage, accidental damage, together with its key position as a vital link in the country's national defense system, weighed heavily in favor of immediate commencement of the job. Furthermore, trains now crossing the trestle are limited to 30 mph for streamliners and 20 mph for other trains. But when the embankment crossing has been completed, full speed operation will then become possible under normal maintenance.

According to D. J. Russell, S.P. president, less than $2 million will be required for installation of track and signal equipment after completion of the fill. That expenditure is considered very small in view of the total cost of the project of almost $4 million per mile, he said.



PROPOSED HALF SECTION ON CLAY



PROPOSED HALF SECTION ON SALT

House hearings hit federal aid and thus . . .

Hopes for Big Pollution Plan Fade

The proposed billion-dollar federal aid to cities for sewage plant construction probably will be knocked out of the House bill designed to strengthen and extend federal water pollution control. That is, if last week's hearings on the bill, H. R. 9540, are any indication.

The startling provision on grants for construction, introduced by Rep. John A. Blatnick (ENR Mar. 8, p 24), had hardly sunk in on sewage works people when hearings were held last week. It appeared that the very suddenness of the proposal had significant bearing on the testimony offered.

The majority of state pollution control officials appearing before the House Public Works Rivers and Harbors Subcommittee scored the $100-million-a-year grant-in-aid feature as a threat to state primacy in the pollution control picture. Federal officials went along. But much of the testimony appeared to be a reaction against endangering passage of the remainder of the bill for which there is overwhelming support.

A number of regulatory officials straddled the grant-in-aid provision. There was concern that authorized financial aid might actually delay construction if not followed promptly by appropriation of funds. On the other hand, it was pointed out that sewage treatment plant construction was accelerated by federal grants in the Thirties under PWA. One pro-grant witness argued that "states rights principles don't build sewage treatment plants."

Aside from the construction aid section the House bill is a slightly amended version of S. 890 passed by the Senate last June.

• **At the hearings**—Notable among speakers at last week's hearings on the House bill was Ralph E. Fuhrman, executive secretary of the Federation of Sewage & Industrial Wastes Associations. His prepared Statement had not a word to say about Section 6 of the bill, that deals with grants to construction.

Specific arguments on the federal aid question were set forth as the hearings opened by Assistant Secretary of Health, Education and Welfare Roswell B. Perkins. "We do not believe," he told Congress, "that a general municipal need for financial aid—and particularly federal aid—for this purpose has been established." Cities can raise their own funds, he added, but "commonly" give the sewage problem a "low priority" in their capital financing programs.

Aside from this, the Administration's spokesman also criticized the bill's construction grant's provision for giving "preference to small town needs." Larger cities have a bigger sewage problem, Perkins said. The House bill, he charged, would reward "laggards" by providing funds for future construction only; cities that already have construction under way would get little or no federal money.

A score of municipal officials—ranging from New York City's Health Commissioner to small town mayors—saw large-scale federal aid as the only solution to a rapidly worsening sewage problem. Many cities, having already reached state-imposed legal debt limits, are unable to float bond issues to finance sewage works. Even when not so limited, they find it difficult to get voter support for sewage plants because of competing demands for other needed construction.

Authority accepts American Cyanamid's . . .

Unique Sewage Service Offer

The Somerset-Raritan Valley Sewage Authority on the upper Raritan River in New Jersey voted last week to accept an offer by the American Cyanamid Co. to give secondary treatment to domestic sewage from the area served by the authority (ENR Dec. 1, 1955, p. 24).

The authority is now proceeding to secure land adjacent to the Cyanamid plant in Bound Brook on which to build primary treatment facilities with an initial 5-mgd capacity and to set up service contracts with the three participating municipalities, Somerville, Raritan and Bridgewater. Then it will sign a ten-year agreement with American Cyanamid, subject to review after seven years, under which the latter will charge the authority only the proportionate operating cost of electricity and chlorine used in the secondary process. Cyanamid will bear alone the small financial burden of building slightly enlarged secondary facilities to handle the domestic flows from the authority.

If developments proceed normally, Whitman, Requardt & Associates of Baltimore, consultant to the authority, forecast that construction of the primary plant and an intercepting sewer can begin by March 1957 and should be completed in ten months.

The adopted plan is hardly recognizable from the one proposed in early studies (ENR June 11, 1953, p. 27) which envisioned a $7.75-million project by the authority to treat wastes from Cyanamid, nearby Johns-Manville Corp., the borough of Manville, plus the three currently participating municipalities, in a 28-mgd complete treatment works.

Finally approved in a project totaling $2.85 million, including $1.05 million for the 5-mgd primary treatment plant and $1.2 million for a 48-in. interceptor 4.6 mi long compared to providing complete treatment, this plan will save the municipalities $630,000 in initial cost and $37,000 in annual charges, broken down to $25,000 in interest and amortization savings and $12,000 in operating cost savings. Of course, should the authority build a secondary works after seven or ten years, the fixed-cost savings will become only postponed annual charges.

Residents of the area served will be getting a good bargain—authority charges to the municipalities will vary between 14 and 19 cents per 1,000 gal.

The unusual situation of a private industry providing a public body with sewage treatment services stems from several factors. Flows from American Cyanamid will be in the order of five times the average 3.3 mgd expected from the municipalities. Research work on a satisfactory treatment process for Cyanamid wastes, which are largely inorganic and contain about 40,000 lb per day of biochemical oxygen demand, is still under way. And perhaps most important, it is more advantageous for Cyanamid to be able to depreciate cost of its treatment works over relatively short period than to be obliged to pay annual charges over a longer period to enable the authority to retire 40-year bonds.

A final decision by American Cyanamid as to the treatment process it will adopt is awaited with much interest. In the last three years, it has spent upwards of $600,000 on laboratory research and pilot plants of both filtration and activated sludge methods of treatment.

Through an active recruitment program . . .

Railways Compete for Young Engineers

U. S. railroads are very much alive—and they're fighting hard for their share of business and the men needed to do a better job of transportation.

That was the feeling most in evidence after the three-day meeting of the American Railway Engineering Association in Chicago last week. As usual, most of the formal convention program was devoted to seemingly routine reports of the more than two dozen working committees—but even in those reports, and outside the meetings the talk was optimistic.

Quick checks of some of the 2,500 delegates (out of a total membership of about 3,500) at the meeting turned up these points of major interest to the rest of the construction industry:

The railroads have obviously decided to get into the fight on the basis of better service, better efficiency—not simply on opposition in general to other forms of transport.

• From this determination flows an ever-widening stream of opportunity for young men in the railroad engineering field—opportunities in everything from basic civil engineering to the new world of electronics, chemistry, mechanical engineering and high executive position.

• The railroads are getting the young engineers. Even though they complain—like many other industries—that they can't get enough young men (some said 60% to 70% of their yearly needs), they're doing far better than public agencies and about as well as other private industries.

• **Money and recruitment**—Taking the last of these points first, it was very evident that the railroads are seriously concerned and are seriously working on the problem of replenishing their supply of engineers. The delegates devoted the entire second afternoon of their meeting to panel discussions and reports on their efforts to get young men. They're doing it by means of recruitment at the college level, and by printing brochures for use both in colleges and high schools by student advisers and the students themselves.

And they're also doing it by offering salaries on a par with other private industries—an average of about $400 per month for a fledgling civil engineer. Further, they're offering regular raises, after stated periods of time.

Further still, they're making efforts to provide solid, interesting training programs, to insure that the young men are offered real careers, and their talents not misused. Some railroaders reported that time-honored seniority systems are being bypassed, where necessary, to make sure younger men get a better chance for advancement.

• **Compete but cooperate too**—The railroad companies admit that as the volume of research work in this country continues to grow, there will be an increasing demand for engineers and technically trained men, which will make it tougher for the railroads to fill their ranks. But, instead of stepping up the competition to get more of these graduates, it was suggested that everyone interested in engineers join hands in promoting the idea of basic science or engineering training to high school students.

• **Better plant**—Otherwise, the railroads are concentrating on what one official called "making a better transportation factory" that can compete with other forms of transport on any terms. (They weren't happy, of course, about what they term restrictive federal laws that prevent them from competing "fairly" on a price basis, with other transport forms.)

But concentration on such matters as welded rails for better roadbeds, on the huge new automatic switching and classification yards, on mechanical means for maintenance of way, are the order of the day.

• **New officers**—William J. Hedley, Assistant Chief Engineer, Wabash Railroad, St. Louis, was elected president of AREA, succeeding G. M. O'Rourke, Assistant Engineer, Maintenance-of-Way, Illinois Central Railroad, Chicago. Ray McBrian, Engineer of Standards and Research, Denver & Rio Grande Western Railroad, Denver, was advanced to senior vice president, and B. R. Meyers, Chief Engineer, Chicago & Northwestern Railway, Chicago, was named junior vice president.

• **New lab**—Held in conjunction with the AREA meeting were groundbreaking ceremonies for the Association of American Railroads' new $500,000 addition to its research center on the Illinois Institute of Technology campus in Chicago.

William J. Hedley, AREA President.

Tunnel Bids Called

Continental Divide job okay if under $16 million

The Colorado Highway Commission has called for bids on construction of the long-discussed highway tunnel under the Continental Divide.

Bids—which must be within the $16-million bond limit set by the 1955 Colorado Legislature—will be opened May 1. The invitation will include only general specifications proposing a tunnel at least 30 ft wide with minimum clearance of 14½ ft.

One proposed site a mile east of Berthoud Pass summit would require a tunnel 3.6 mi long to cut some 10 mi off steep, twisting U. S. Route 40 over the pass. The east portal would be at a 9,475-ft elevation and the west portal at 9,775 ft. The other suggested route—on Straight Creek north of Loveland Pass and on U. S. 40 and U. S. 6—would be 7,000 ft long. Its east portal elevation would be at 11,105 ft; the west portal, 11,210 ft.

Consulting engineers—Singstad & Baillie of New York City and Howard, Needles, Tammen & Bergendoff of Kansas City, Mo.—reported that a tunnel beneath Berthoud Pass, 70 mi west of Denver, would cost $48 million. The governor, however, claimed the engineers has designed a "gold plated" tunnel and said he was certain from his own investigations that the Berthoud Pass project could be built within the authorized sum.

The highway commission recommended rejection of all tunnel proposals because the price tag would far exceed the $16 million limit.

17-YARD REAR DUMPS roll around the clock at Brownlee site on the Snake River. View is downstream toward the Oregon Mountains. Bridge at left is now complete.

Busy Winter at Hell's Canyon

Literally within hours after Idaho Power Co. received a long-sought-for FPC license for Brownlee Dam on the Snake River last November the contractor, Morrison Knudsen Co., was moving equipment into the area. Thus began the race to prepare for diversion of the river right after this spring's high flood crests. The fast pace is necessary to meet a May 1958 target date for first power generation.

Almost 500 men, working around the clock through a rigorous winter, have made real progress to date in harnessing this Hell's Canyon stretch of one of the nation's most turbulent streams:

- A 600-ft-long permanent steel girder bridge is completed.
- Upstream and downstream channels to the diversion tunnel are excavated. This involved moving 500,000 cu yd of rock and earth for cuts 100 ft wide and 50 ft deep.
- Drilling and blasting for the tunnel itself, 40 ft in dia and 540 ft long, began at the end of February.
- Cofferdam fills both upstream and downstream are well advanced toward meeting the late May closure schedule.

In addition, logistic support construction stands as follows:

One 30-acre camp site is occupied, another 20-acre camp site is cleared and has utilities installed for trailer homes, sites have been leveled for concrete batch and rock crushing plants and an access road runs to the nearest railhead, at Robinette, Ore., 8 mi downstream. This road was carved through 4 mi of rock on the Idaho side; then crosses the river on the new 600-ft bridge and runs to Robinette on an abandoned railroad right-of-way. All is just about ready for the 1,000 men expected on the site by June.

After diversion in late May, construction timetable calls for closing of the two cofferdam fills by mid summer and then a big excavation job through 105 ft of sand river bottom silt to bedrock. The excavated material will be used to fill a second, and higher, upstream cofferdam to hold back the Snake River's flood crests expected in mid-spring of 1957.

Brownlee Dam is the first of three low-level dams to be built by Idaho Power Co. along 37-mi natural gorge of the Snake River where it forms the boundary between Idaho and Oregon. Brownlee is located just below the mouth of the Powder River. The second dam, Oxbow, will be located 13 mi downstream.

Already licensed by FPC, Oxbow construction is scheduled to begin in 1959. Some 23 mi farther downstream will be Hell's Canyon Dam—not yet licensed but a part of the three-dam scheme to substitute for a single high-level dam that was, and still is, advocated by public power enthusiasts.

Brownlee Dam will rise 395 ft along much of its 1,320-ft crest length. Initial power capacity at this site will be 360,000 kw with an ultimate 540,000 kw possible. This $63-million first phase also will provide 1,500,000 acre ft of flood-control storage.

The three dams comprising the Hell's Canyon project are to be completed in 1964 at a total cost of $176 million. Total ultimate power capacity will be 1,175,000 kw.

Flood Warnings Set

Weather Bureau and New England establish system

A new storm warning system for all of New England has been worked out by the U. S. Weather Bureau and state officials.

The plan calls for the collection and evaluation of reports of rainfall, stream conditions, ground conditions, run-off potentials and all other factors contributing to floods from all points in Vermont, New Hampshire, Massachusetts, Rhode Island and Connecticut. The reports will be received at the Weather Bureau station at Bradley Field in Windsor Locks, Conn.

Then, whenever either general or localized flood threats appear imminent, the warning will be fanned out over state police radio and teletype networks to communities and other states.

In commenting on the plan, Connecticut's Gov. Abraham A. Ribicoff said the new system will "do about all we can to provide adequate and sufficient warning of threatening high water. It will at least give property owners time to take whatever precautions are possible." He added that the damage toll of last year's August and October floods might have been much lower had the people and property owners known "a little bit more of what to expect."

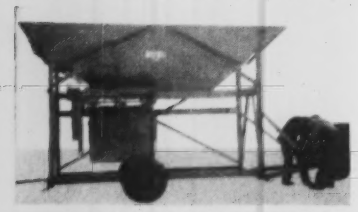
Plans for Two Expressways Pushed Forward by Detroit

Detroit is moving ahead with plans for two new $100-million superhighways—the Hastings-Oakland Expressway and the Fort Vernor Expressway.

The city will be ready to start work on the Hastings-Oakland project the minute federal matching funds become available and agreements are reached with state and county road officials. Planning for the 8-mi Fort-Vernor route is not as far advanced but is being rushed forward.

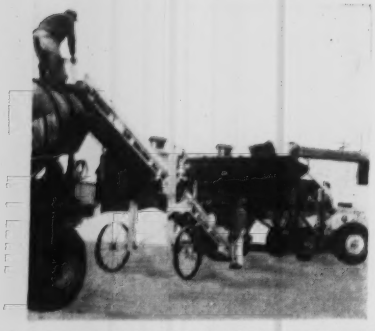
Mayor Alfred E. Cobo has put $2.1 million in his 1956-1957 budget for the city's share of matching funds for the state of the expressways. Federal money is expected to be available the first of July.

CIMCO "TWIN-TRIPLE" BIN THE FIRST "REALLY NEW" BATCHING IDEA IN YEARS



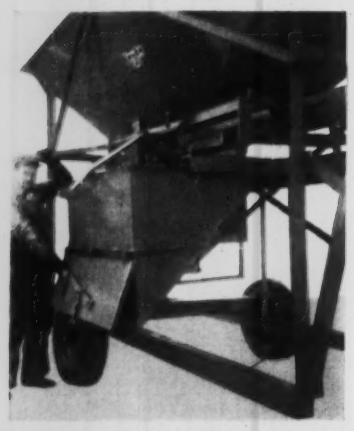
Here is a "BIG" 2 or 3 compartment Twin Bin easily moved and set up by 2 men. It pulls behind car or pickup 40 mph.

WE CALL IT "TWIN BIN" YOU'LL CALL IT *MIRACLE* GET'S "BIG BIN" RESULTS



A 4 man crew loads a Truck Mixer fast. The Twin Bin batches aggregate fast as most mixers and conveyors can take it. Cement goes up in sacks. Water is handy.

USE A CIMCO TWIN BIN ENGINEERED FOR SPEED "PATENTED DESIGNS" CUT YOUR JOB COSTS



A CIMCO TWIN or TRIPLE BIN is easy to operate. There are 4 things to do—ONE-AT-A-TIME. (1) Weigh in the aggregate. (2) Roll hopper a max. of 26 to center of Flip hopper forward. (3) Dump the load as shown above.

WHEN YOU MIX CONCRETE NEED 2 or 3 AGGREGATES SMALL READY-MIX SET-UP LARGE MIXER CHARGING BATCHERS — BUCKETS — BINS *THINK OF* CIMCO

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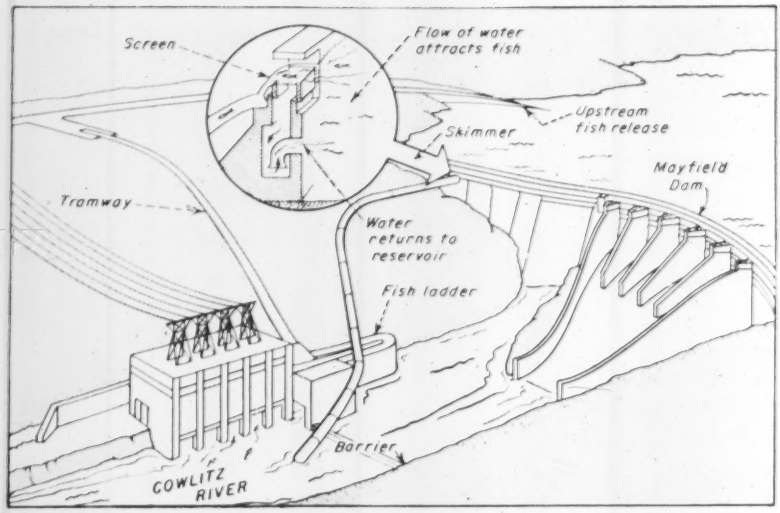


FISH PROTECTION DEVICES, now being tested, would cost City of Tacoma $7 million to incorporate with Mayfield Dam.

$7 Million for Fish Protection

While attorneys for the City of Tacoma, Wash., are engaged in a court battle over the city's right to construct the Mayfield hydroelectric dam on the Cowlitz River (ENR Feb. 2, p. 27), city engineers have revealed a scheme which they feel will meet the objections of fishery interests to the project. It consists of a unique skimming device designed to get tiny fingerlings downstream, and a fish ladder and tramway that will get large salmon and steelhead upstream without injury.

Tacoma is prepared to spend $7 million for the devices, probably the largest sum ever contemplated by a power utility to protect fish in a stream. A total of $72,000 already has been spent of $365,400 allotted for research, which is being conducted by Tacoma City Light, the municipal utility, in cooperation with the State Fisheries and Game Departments and the U. S. Fish and Wildlife Service.

Fingerlings swimming downstream would be attracted to a "skimmer" at one end of the dam by 400 cfs of flowing water. Fish would pass over a screen; much of the water would pass through the screen and return to the reservoir. The fish would then continue through an enclosed caseway, or chute, to well past the 185-ft-high dam. Pressure in the caseway would be controlled by regulating flow of water.

Large fish on their way upstream would be attracted to "ladders" below the dam by flowing water produced by pumping; in the same manner the fingerlings would be attracted to the skimmer. Fish enroute to spawning beds seem to be instinctively attracted by flowing water.

Six separate entrances would guide the fish to the ladders while a barrier dam would prevent any from reaching the spillway. With each successive "rung" of the ladder, the fish would swim one ft higher. A containing pool at the ladder's top would feed into a second pool equipped with a movable screen at the bottom. This would ease the fish into a hopper that would periodically move up to and over the dam and then release fish into the reservoir.

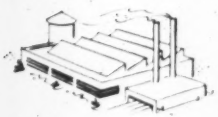
Initial tests of the fish facilities are under way at the University of Washington. Hal W. Birkeland directs the fish protection efforts of Tacoma City Light.

In addition to these protection facilities at Mayfield, Tacoma plans to build hatcheries to compensate for any fish losses.

Delaware State Board Gives Approval to Fluoridation

After studying the effects of fluoridating drinking water in the city of Newark for five years, Delaware's State Board of Health gave the-go ahead to all state communities.

The leading statistic was a 32% drop in tooth decay among children in the 6 to 10 year age group after five years of fluoridation. Further, it was reported that there was a 34% increase in the number of children in this age group that had caries-free permanent teeth.



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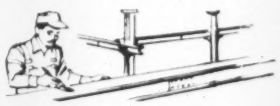
Industrial leaders all over the world have used Rust-Oleum to stop and prevent rust for over thirty years. Rust-Oleum can do the same for your tanks, stacks, pipes, machinery, metal sash, wire fences, girders, etc.

RUST-OLEUM IS EXCLUSIVE

Rust-Oleum uses a specially-processed fish oil vehicle that penetrates rust to bare metal, dries right, and is free from objectionable odor. Accept no substitutes. Buy—and specify Rust-Oleum. You'll be happy that you did. There is only one Rust-Oleum—it is distinctive as your own fingerprint.



APPLY DIRECTLY OVER RUSTED SURFACES

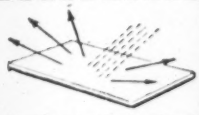
Just scrape and wirebrush to remove rust scale and loose rust—then brush Rust-Oleum 769 Damp-Proof Red Primer right over the remaining rust, usually eliminating costly surface preparations. Then—follow-up with your desired Rust-Oleum finish color.

MANY COLORS, INCLUDING ALUMINUM AND WHITE

You beautify as you protect, because Rust-Oleum finish coatings are available in practically all colors, including aluminum and white. They use the same basic rust-inhibiting vehicle as Rust-Oleum 769 Damp-Proof Red Primer and so provide double protection.

GREATER COVERAGE—EASY TO USE

Rust-Oleum is so easy to apply by brush or spray that one man can often do the work of two. Because of Rust-Oleum's easy-flowing qualities, an average of 30% more coverage is usually received—depending upon the type and porosity of the surface.



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Rust-Oleum dries to a firm, decorative finish that resists salt water, heat, fumes, sun, steam, humidity, and weathering. Whatever your rust problem—you'll find Rust-Oleum the modern, practical way to stop rust.

Facts

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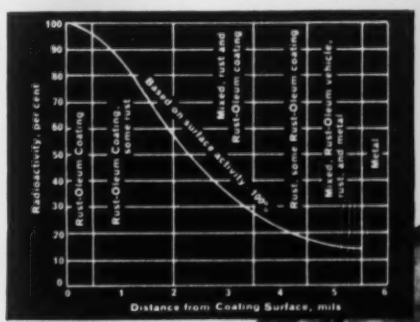
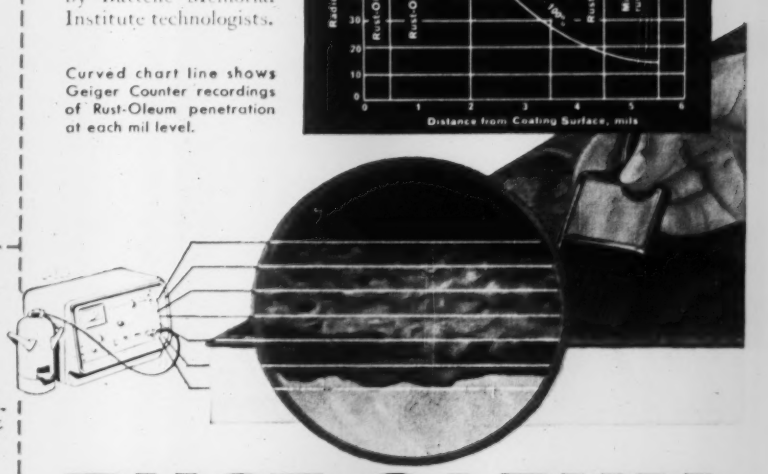
Geiger Counter traces Rust-Oleum penetration through rust to bare metal. The results of radioactive research prove that Rust-Oleum penetrates rust to bare metal. Rust-Oleum's *specially processed* fish oil vehicle was radioactivated and formulated into Rust-Oleum 769 Damp-Proof Red Primer—then applied to rusted test panels. Geiger Counters then traced Rust-Oleum's *specially-processed* fish oil vehicle through the rust to bare metal. This penetration enables Rust-Oleum to be applied directly over sound rusted surfaces—usually eliminating costly surface preparations. Attach coupon to your business letterhead for your thirty-page report, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.



Curved chart line shows Geiger Counter recordings of Rust-Oleum penetration at each mil level.



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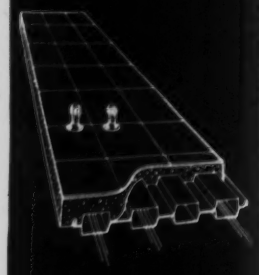

Celluflor raceways, spaced on 6-inch centers, carry electrification and other hospital services. In administrative areas, outlets can be placed at practically any point on the floor (above). In wards and rooms, cells provide services to wall outlets (as shown below)

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The clean, dry raceways of Celluflor carry a variety of utilities

For example, Celluflor cells carry electric wires for bed lights, heat lamps, and wall receptacles. The cells also carry cables for television and radio, nurse signals, and telephone jacks. Occasionally, the cells channel oxygen (through copper tubes) to each bed location.

Milcor Celluflor also provides for the unforeseen electrical needs of tomorrow, making it easy to relocate technical facilities in former ward areas or to extend greater services to other locations.

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Catalog No. 270, available upon request, suggests how the variety of Milcor Celluflor types enables you to apply this modern idea in floor construction to specialized conditions in many fields.

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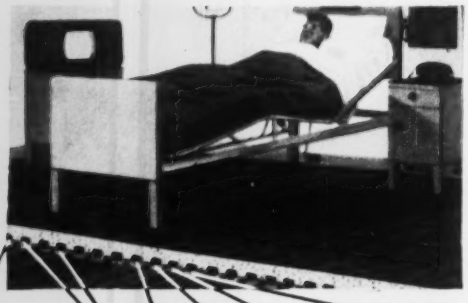
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Highway Problem

Tardy movers slow work on Connecticut Turnpike

Construction of the Connecticut Turnpike is being slowed down by the failure of residents to vacate property that has already been acquired by the state.

State Highway Commissioner Newman E. Argraves reports that the reluctance of owners to move from their homes is the top problem to come up thus far during construction of the 192-mi superhighway.

The turnpike—scheduled for completion by Dec. 31, 1957—will run from the New York State line at Port Chester to the Rhode Island boundary near Killingly. Some 500 property units between the New York line and New Haven still are occupied. And many of these must be vacated immediately to permit work to go ahead.

The state has come to terms with the majority of home owners in the path of the turnpike. However, there are several instances where negotiations have broken down completely and the cases have been referred to the courts.

New Engineers Appointed For Koolau Mountain Tunnel

The City-County of Honolulu, Hawaii has hired R. G. Miller as special engineer and J. D. Jacobs, consulting engineer to help complete the final 860 ft of Wilson Tunnel through Koolau Mountain.

Work in the tunnel remains at a virtual standstill awaiting the fabrication of steel forms required under the new specifications drawn up in the contract settlement (ENR Feb. 9, p. 25). No construction has been carried on since the bore collapsed in August 1954.

In the meantime, the tunnel contractor, E. E. Black, Ltd. has named a new tunnel superintendent.

$75 Million Proposed for Removing State Road Dangers

A $75-million program to clear some of Pennsylvania's most heavily traveled routes of 15 "danger spots" and "traffic bottlenecks" has been proposed by the State Highway Department.

Requested on a stage construction basis, the program would complete two or three jobs a year as money for the proposed projects becomes available.

The biggest project, estimated at $15 million, would center around Coatesville and Dowington.

HOW THE CAT* No. 12 MOTOR GRADER HELPED CUT COSTS

on the Garden State Parkway

Last year New Jersey's fine four-lane Garden State Parkway went in from Cape May to Paramus. Along one section of this big job the haul roads ran a mile and a half from borrow pit to fill—and the fill was 100% sand. It took continuous grading to keep the fill compacted, and Public Constructors, Inc., of Pleasantville, N. J., relied on four Cat No. 12 Motor Graders to do the job, as well as to keep the haul roads in shape.

"What would a contractor do without Caterpillar when there's an earthmoving job to be done?" wonders Supt. John W. Franks. Mr. Franks likes lots of things about the No. 12—mostly its low-cost features. And the *new improved* No. 12 offers greater low-cost advantages than ever.

Costs less to maintain. There's extra life built into every part of the Cat No. 12. The new exclusive Caterpillar Oil Clutch, for example, practically eliminates disc replacement and reduces down time considerably.

Costs less to operate. Just one reason among many: the heavy-duty 115 HP engine delivers efficient power on low-cost non-premium fuels.

Produces more. Positive controls; easy, natural steering that maintains "feel of the road"; clear visibility; fast, accurate blade positioning—features like these add up to maximum operator comfort and convenience, higher production on any job.

AND NOW, ANOTHER NEW COST-SAVING FEATURE: New tubeless tires do away with expensive tube and flap trouble, eliminate costly tube replacement and can cut over-all tire down time *by 80%!*

No wonder Supt. Franks says, "To us, Caterpillar is the old reliable, always out in front with new designs that assure you not only the latest, but the best."

See *your* Caterpillar Dealer for full details on the high-producing, cost-cutting Cat No. 12 Motor Grader. There's nothing else like it available—anywhere.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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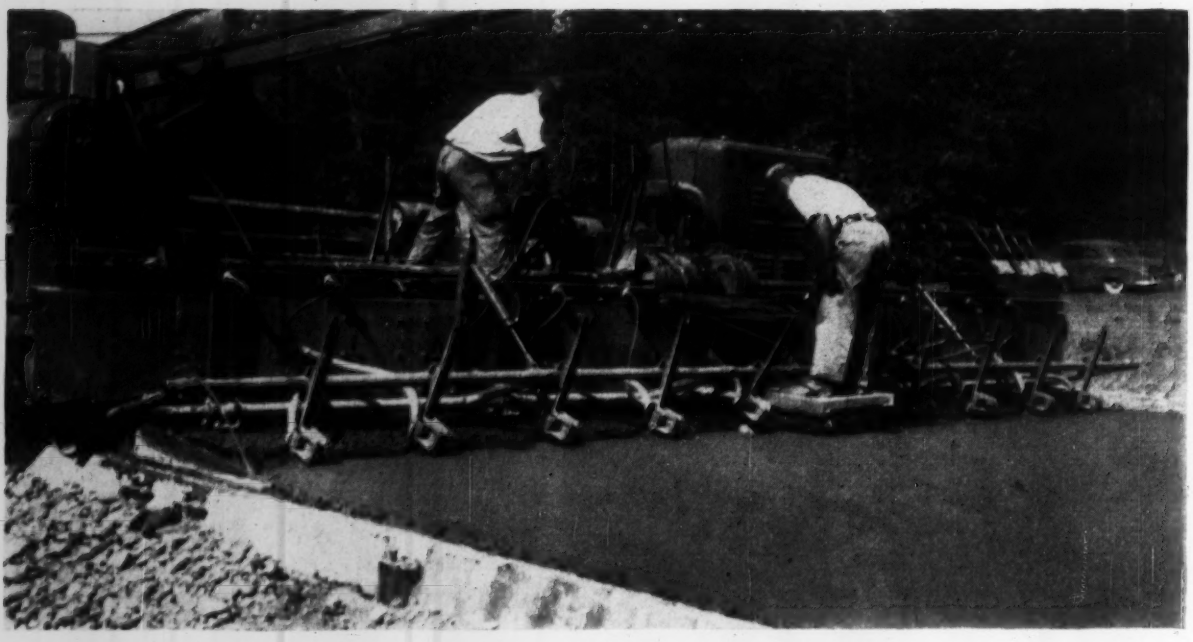


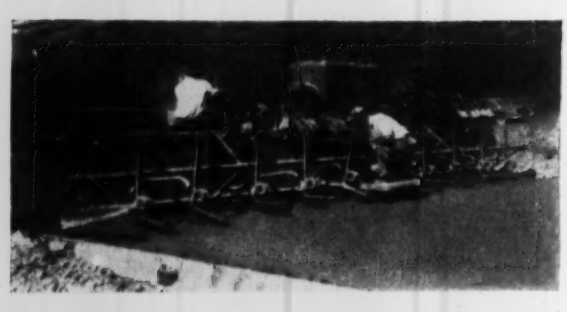
Now... *uniform internal vibration improves full slab concrete quality—increases production 20% on airport and highway paving jobs!*

Maginniss Hi-lectric internal full slab vibrators operate completely immersed below concrete surface—provide uniform vibration throughout the slab. This uniform internal vibration assures a homogeneous mixture of aggregate and mortar from base to surface of slab—produces better concrete. And, actual internal vibration with Hi-lectrics speeds concrete distribution—leaves surface semi-finished—cuts finishing time—increases pavement production!

On a recent highway paving job, use of Maginniss internal full slab vibrators enabled the contractor to eliminate the second pass of the finisher—increased daily paving production 20% over that obtained with the vibrator formerly used!

The lightweight Hi-lectric attachment mounts directly on the spreader or finisher—requires no auxiliary carriage. Machine operator controls vibrator position, operation and frequency to suit consistency of concrete and other job conditions. Slabs up to 25 ft. wide and from 4 to 19 in. deep can be vibrated efficiently and economically.

Find out how *uniform internal vibration* can improve concrete quality, speed production, and cut costs on your airport or highway paving jobs. For full information, call your nearest Maginniss distributor. He's listed in the Yellow Pages under "Concrete Vibrators." AA-2968



Uniform vibration of this 24 ft. x 9 in. highway pavement slab was provided by 10 Maginniss motor-in-head vibrators spaced 28 in. apart. Center dowels were accurately positioned at proper depth by dropping them ahead of two center vibrators.

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POWER TOOL COMPANY
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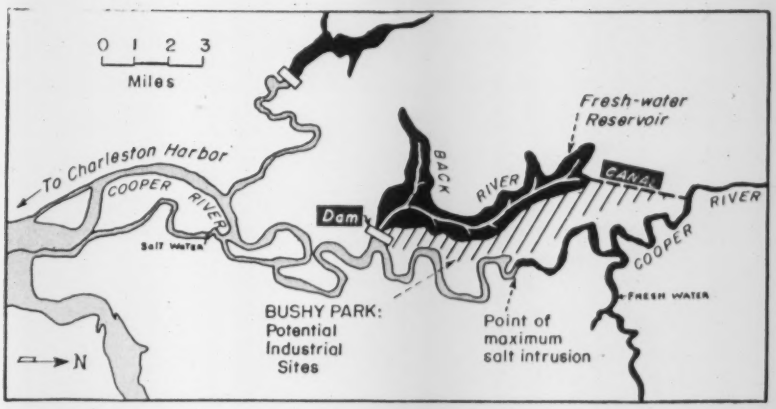
Scheme for developing an industrial water source at tidewater in Charleston, S. C., is now well along



Water Bargain Sale Scheduled for July

Charleston's Cooper River diversion project is due to be completed in July of this year. If it measures up to expectations, a 10,000,000,000 gal daily supply of water will have been made available to the so-called Bushy Park area at the phenomenally low cost of some $4.5 million.

Bushy Park (see map) will become an area bounded on one side by this almost inexhaustible supply of soft fresh water, on the other side by tidewater. The potential for industrial development is obvious.

With this industrial development in mind the state legislature created in 1953 an eight-man authority to administer the project. In 1954 Charleston's city council approved a $1 million bond guarantee to get the project started, with the Authority scheduled to issue long-term revenue bonds for the remaining $3.5 million.

The construction plan is quite simple. A canal is being cut across low-lying land that separates the Cooper River from the Back River. A dam is being put across the lower end of the Back to keep fresh water in and salt water out of what will be a sizable reservoir. The dam will also carry a railroad connection to service the area.

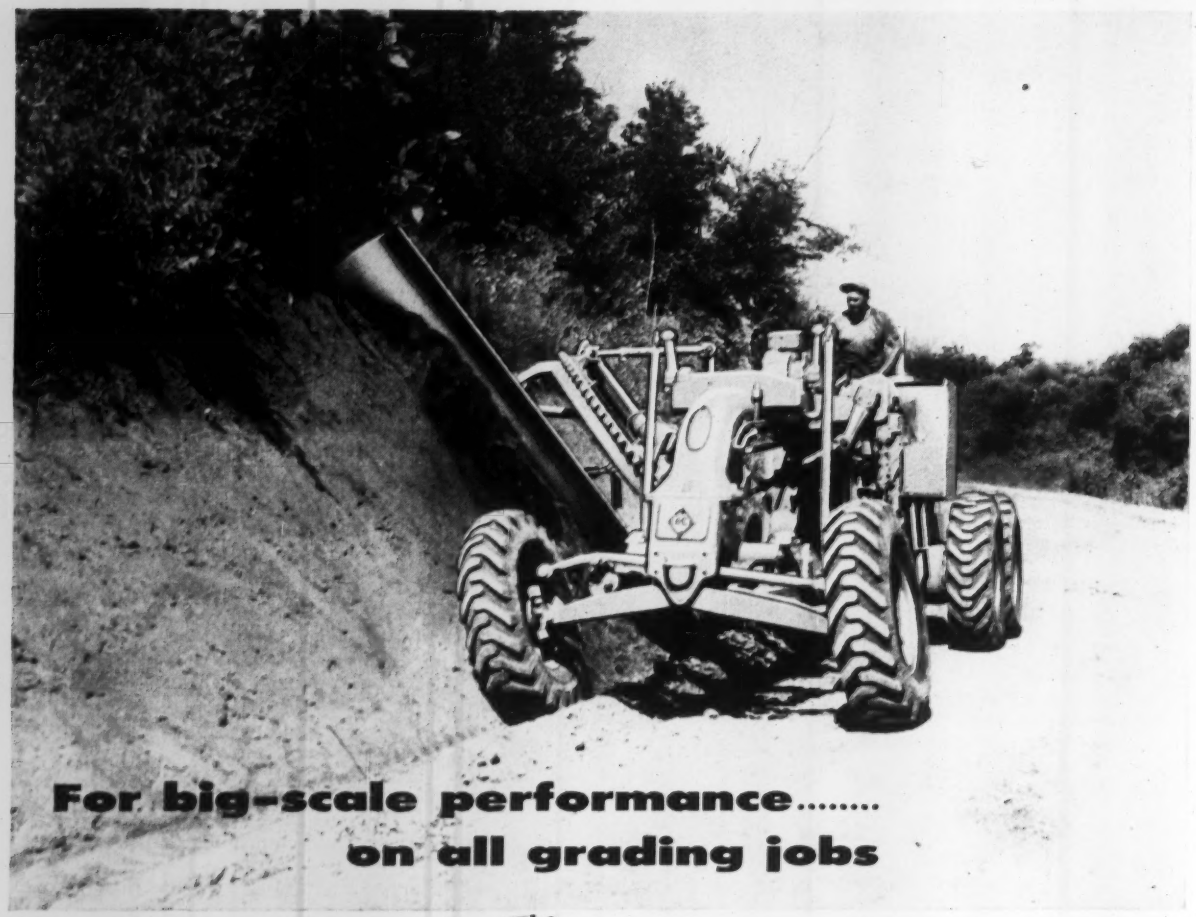
Construction is further simplified by local geology. The marl of the area is soft and easy to dig. But it has the fortunate quality of case hardening when exposed to the air. There are unlined tunnels through this material for water supply in the Charleston area that are almost as good as concrete-lined bores. The material is expected to be equally as advantageous in its current use in the dam across Back River.

The man credited with vision for seeing possibilities of this river diversion scheme is engineer Arthur M. Field. The feasibility of the project was established in a study done by Warren Bradlee of Ford, Bacon & Davis, New York.

All that remains now is for the Bushy Park Development Authority to find the industries that will move in and use the water to be provided. Efforts to accomplish this have apparently not been fully fruitful as yet, but the idea may be easier to sell once the diversion scheme is completed and the fresh water lake, with its 10-bgd source, becomes an accomplished fact.

CANAL will bring Cooper water to the Back from below Santee-Cooper project.

DREDGED DAM will keep salt water out of the Back River and make fresh water lake. Local marl makes good dam material—sets like mortar when exposed to air.



SEE THE Forty Five BEFORE YOU BUY

Here's motor grader design that pays off in extra output on today's tougher, more precise jobs. You get these big advantages when you put the FORTY FIVE to work for you—more power at the wheels, more dirt at the blade, plus precision control and ease of operation.

Allis-Chalmers diesel engine with follow-through combustion provides real lugging ability . . . responds quickly to varying load conditions . . . has the power with tandem drive to pull through soft spots, roll big windrows, peel off that last inch of tough, hard dirt.

ROLL-AWAY moldboard reduces friction drag by rolling the load up and ahead of the blade edge . . . moves more dirt with less effort . . . makes more efficient use of engine power on sloping, rough grading, stripping and other heavy-duty construction and maintenance jobs.

Toggle-type controls give the operator finger-tip command of every blade position, every job. Exclusive mechanical toggle-type action provides a positive "feel," yet operation of moldboard components, scarifier and front wheel lean is accurate and easy.

Get a demonstration of the FORTY FIVE from your Allis-Chalmers dealer . . . let him show you how fully-enclosed power steering, accelerator-decelerator pedal, "box seat" comfort and visibility, and other features give you an extra measure of performance on all your grading jobs. Check the complete service program he offers you . . . factory-trained servicemen and True Original Parts for high-quality service, continued top performance and long equipment life.

Forty Five
120 brake hp
23,800 lb
6 forward speeds
to 20.6 mph
3 reverse speeds
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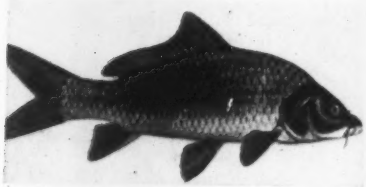


The Carp:

This immigrant fish menaces a fisherman's paradise—the great reservoirs of the West. When he comes, game fish leave. But during tests last year at Fort Randall, Army Engineers placed this . . .

Aquatic Criminal Under Arrest

Ralph J. Smith
Staff Correspondent
Omaha, Nebraska

The days of the carp, as scavenger of other fishlife in the man-made lakes of the West, appear numbered. This little-known aquatic criminal stood as a threat to the recreational development of the dambuilders' reservoirs.

The Corps of Engineers sounded the knell during tests last spring, results of which recently became available. The control method is deceivingly simple: Strand the carps' eggs on high ground during spawning season and they will not hatch.

Few are aware of the seriousness of the carp's threat to the nation—a threat that began in 1882 when carp were imported to this country from Germany by the government. The theory, in those pre-refrigeration days, was that they would be a valuable source of fresh food during summers when farmers were limited to preserved meats such as bacon, cured hams and salt pork. With this objective, the seed stock was sent throughout the nation. Any farmer who had a pond or dammed a creek could write his Congressman and get a supply for stocking purposes.

Inevitably the carp escaped. Ponds were flooded and dams washed out, turning the captives into flowing streams. They distributed themselves widely.

So long as carp are in running water, natural factors tend to keep their numbers checked. Once they get into a reservoir the carp population fairly explodes.

• **Carp come, game fish go**—When carp take over, the game fish must go. The carp is a vegetarian. It has a retractable snout that it pokes out like a nozzle. It goes over an area with the voracious thoroughness of a vacuum cleaner, destroying all vegetation. The balances of nature are sensitively poised. The breathing of plants helps maintain the water's oxygen content. The life cycle of insects—a principal source of food for game fish—is dependent upon aquatic plants. When the vegetation is destroyed by the carp, both food supply and oxygen are affected and game fish suffer—or disappear.

Located in places shortchanged by nature, many of the western dams and reservoirs are meant to be oases in a recreational desert. With the threat of carp, the promised fisherman's haven becomes a mirage.

Until recently, the great frustration was that there was no practical way to control carp in reservoirs. The two tools available—commercial fishing and poisoning—are both impractical. Large cities provide a limited market for carp. However, the western reservoirs all are in an area too isolated for this to be a help. Smaller bodies of water can be poisoned, killing all fish, then restocked with game species. This is too expensive to be practical in the huge reservoirs of the West. The body of water backed up behind Garrison Dam across the Missouri in North Dakota, for example, is longer and deeper than Lake Erie.

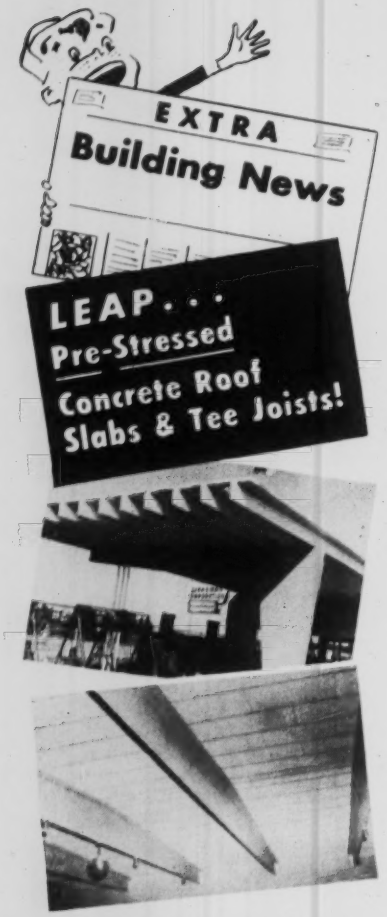
Army Engineers long have given thought to the problem of carp. Their concern was based on first-hand experience. They built Fort Peck Dam in Montana during the depression '30's. For perhaps ten years the fishing was superb. Then the carp took over.

The Corps' concern was matched by South Dakotans. Of the five Missouri River dams built or under construction by Corps, three are in South Dakota. As a state that depends heavily on the tourist dollar, South Dakota saw in the reservoirs a magnet for vacationers—if the carp could be held in check.

• **Plan campaign**—With their mutual stake in carp control, the Corps of Engineers and representatives of the South Dakota Game, Fish and Parks Department held a meeting in Jan. 1955 to discuss experimental carp control in Fort Randall reservoir. Principals were Brig. Gen. W. E. Potter, who heads the Missouri River Division, Robert Pafford, hydrologist, and Walter Aitken, biologist, both of that division, and Elmer Peterson, director, and James T. Shields, biologist, of the state agency.

The topic was a theoretical method of carp control that had never been given any large scale, practical trial. It has to do with the spawning habits of the carp.

During gestation when water temperatures are right, the female carp heads for grassy and weedy shallows to deposit her eggs. Swimming in water so shallow that her back fin sticks above the water, she deposits her eggs in four to eight inches of water. A single medium-sized female will spew out as many as a half million eggs which, being mucilaginous, ad-



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. . . Aquatic criminal under arrest

here to practically anything they touch. In two to three days they "eye" out as the embryo develops. In six to eight days they hatch out.

The South Dakota representatives asked if, when the carp had deposited their spawn, the level of the reservoir could be abruptly lowered. This would expose the eggs to the air and keep them from hatching.

• **Not a bathtub**—The engineers replied that they could, provided they were given enough advance notice. A reservoir as large as Fort Randall's, they explained, can't be filled and drained like a bathtub. A nine-day period would be required to draw the water down in the amount needed.

The two groups agreed to act. South Dakota placed biologists and field crews out to watch the carp and give the go ahead signal. Army Engineers, in turn reshuffled their schedules of water use for power and navigation so the reservoir could be manipulated to implement the experiment.

Though the state and federal agencies co-operated, last spring's weather did not. Normally it warms up until the water reaches incubating temperature, whereupon the carp all lay their eggs. Last year the weather was at its most capricious. Several times it warmed up until the water was just over the threshold of spawning temperature. A few females headed for the shallows. Then, just as it seemed that the spawning rush would start, the weather cooled.

An added complication were the carp themselves. Most of the Fort Randall carp were born in 1953, the year that water was first dammed. Since the male carp matures in two years, 70 percent of the males examined were adults. But the female doesn't become mature until her third year. Only 6.5 percent of the females had reached egg laying maturity, a circumstance that made it difficult to get a large enough representation of adult carp to carry out the experiment.

• **Not deterred**—The biologists and field crews persisted. Daily they caught carp and examined them. The eggs in the females progressively went from the green to the near-ripe to the ripe stage. Meanwhile the workers measured water temperatures and eyed the weather forecasts. In the last days of May, the water temperature began climbing towards 66 degrees, the temperature at which spawning activity was observed to begin. The weather forecasts called for a period of clear, calm days—conditions that act as a stimulant in exciting the carp into laying their eggs.

The biologists gave the nod to the water level controllers. The hydrologists began the pinchdown that, nine days later, would lower the reservoir level.

The heavy run of fish into the shallows began on June 1 and, spurred by the climbing temperature, by June 4 entered a peak period. The shallow water of the reservoir edge was fanned into roiliness and restlessness as the female carp, obeying an instinct as compulsive as that which sends the salmon upstream, headed into the spawning ground with a male swimming on either side in attentive convoy. Spawning ended abruptly June 8 when the weather turned cold and held that way for a week thereafter.

On the same day—June 8—the water began lowering until the reservoir level was dropped 1½ ft. It was held there until June 13. Biologists, examining the spawning areas that had been exposed, everywhere found eggs that had been left high and dry by the retreating water, clinging to the weeds and grass.

Thereafter, the weather played a frustrating game of ring around the thermometer with the biologists, alternately warming and chilling. A second drawdown took place late in June but results could not be evaluated accurately.

Throughout the rest of the season, field crews captured fish in the reservoir and tabulated results of the experiment.

• **And finally success**—The biologists found fish that had hatched the second and third week in May. They found fish that had been born the third week in June. But not one fish was found dating from the period affected by the drawdown.

Said South Dakota's official finding: "It is probable that practically all eggs spawned during the period of June 4 to 11 were exposed and killed. . . The theory of carp reproduction control by water level manipulation appears to have been proven practical."

With this method of carp control established as a workable one, the thinking of both the Corps of Engineers and South Dakota is to apply it as a regular annual activity. The major problem is predicting the spawning season enough in advance to enable the reservoir to be lowered. In years of a normal weather pattern this should not be difficult, it is felt, while experience will refine techniques so that forecasting of the spawning season in difficult weather will become a matter of mechanical routine.

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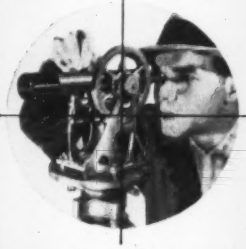

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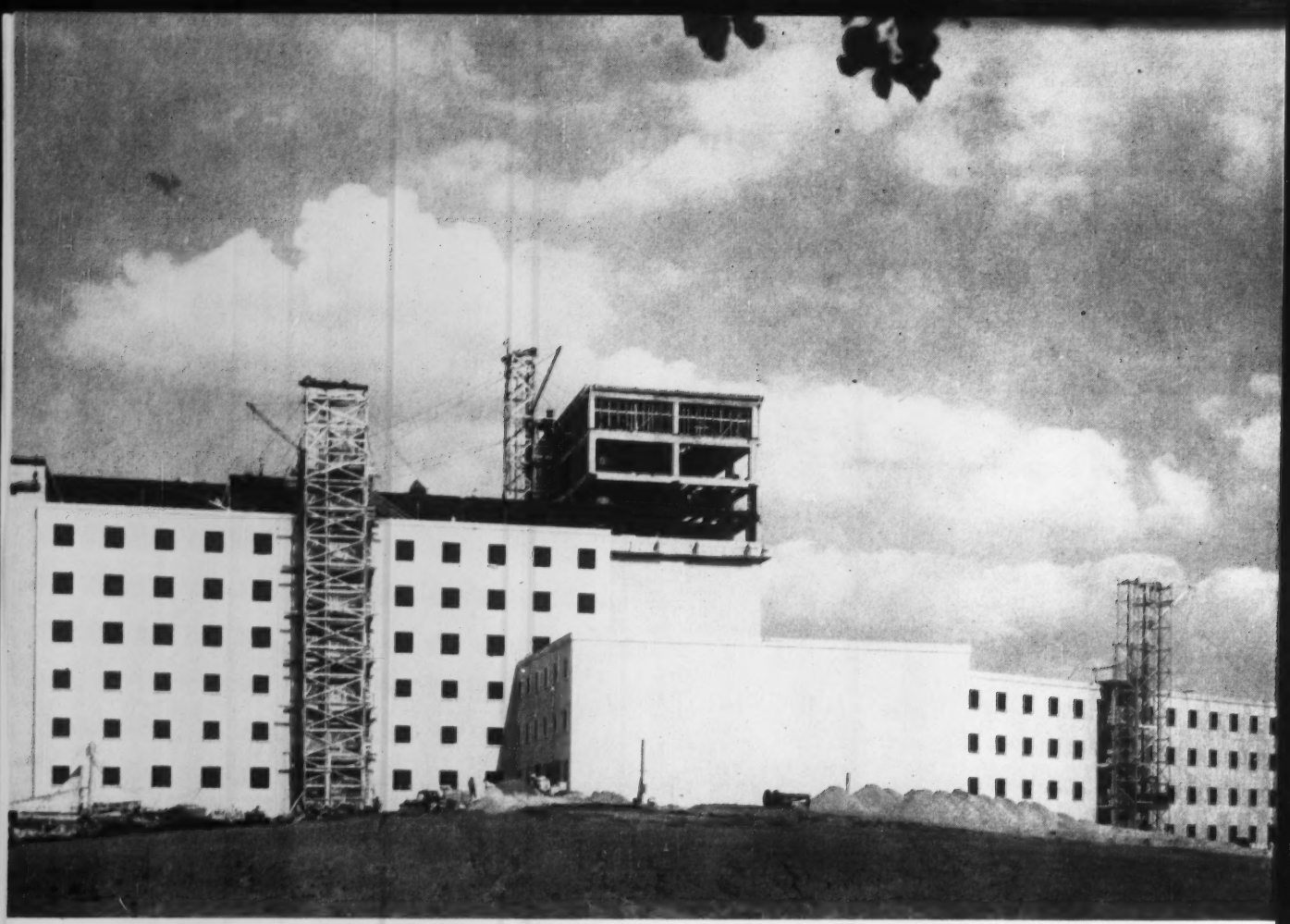

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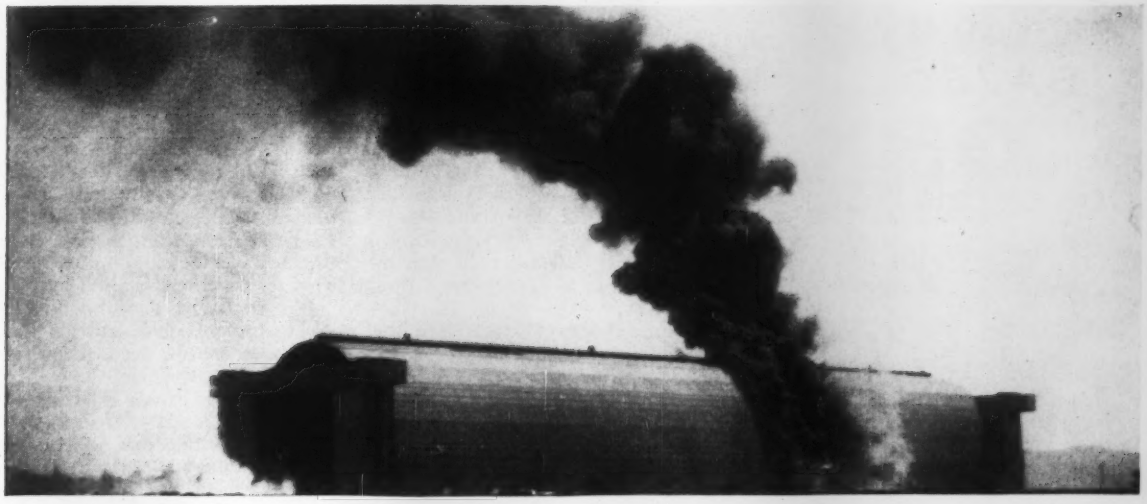

Fire . . .

Roofing material burned when residuals in plywood manufacturing facilities, now occupying former World War II blimp hangar at Tillamook, Ore., burst into flames

But Timber Hangar Frame Stands Up

T. K. May
Director of Technical Service
West Coast Lumbermen's Association
Portland, Oregon

Although a fire late last summer burned 40,000 sq ft of roofing from a large blimp hangar, no damage was suffered by the structural timber framing—a fact that naturally interested the West Coast Lumbermen's Association, which has just completed a detailed study of the structure.

The structure was one of a number of blimp hangars built by the Navy during World War II along the Atlantic, Pacific, and Gulf coasts (ENR Oct. 23, 1942, p. 110), which are claimed to be the largest timber framed buildings in the world. It is located 80 mi west of Portland, Ore., at Tillamook.

The building consists of an arched roof shell, stiffened with a series of transverse arch ribs. It is 1,000 ft long, 170 ft high at the crown and has an overall width at the ground of about 296 ft.

• **Design details**—The arch ribs are truss type, spaced on 20-ft centers, and supported on reinforced concrete abutment bents 24 ft in height. The trussed ribs are 18½ ft deep. Chords vary from two 3x12 to two 4x12 pieces and the web verticals from one 4x8 to one 6x18 piece while the web diagonals consist of two 3x8's.

Purlin trusses, 12 ft c to c, have a 3x10 top chord. The rafters are 3x12's, at about 7 ft spacing, and the roof is sheathed with 2-in. tongue-and-groove planking.

The sheathing constitutes the main bracing for the top chord of the arch ribs, but this is supplemented by V-bracing in the lower part of the building height. In the plane of the bottom chord of the arch ribs, cross-bracing is placed in every other bay. Both split-ring and shear-plate timber connectors were used profusely in the joining of members.

A catwalk runs the length of each side of the hangar at a height above ground of 137 ft. There are stairways at each end of the hangar from the ground to the catwalks and thence to the roof, and a stairway at the middle leading to the catwalks only. A monitor runs the full length of the ridge of the building.

All of these wood parts were pressure impregnated with chemicals for high fire retardance. Federal specifications under which the salts were manufactured and applied are similar to those in use today (MIL-C-2865 and MIL-C-2799). Due to the large

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volume of lumber needed in the wartime rush to complete these many hangars, about fifty treating facilities were used in applying the fire-retardant salts. Hence, in the Tillamook hangars, both Minalith and Protexol were used.

There is another bit of wood framing in a runway inside of the monitor at the top of the building that was not treated with fire retardants. Apparently this was put in after the hangars were built, as it is not shown on the original plans.

• **Roofing**—A description of the roof covering is important as this is the part of the building most involved in the fire. The original roofing was of two types. On the side slopes nearly up to the top, roll roofing in 36-in. widths was laid horizontally with each strip overlapping the lower one, shingle fashion, by 19 in. The 17-in. portion of the roofing exposed to the weather was mineral surfaced.

For most of this roofing the lap of the roll roofing was cemented to the undercourse. Higher up the lap was mopped with hot asphalt to the undercourse and galvanized roofing nails secured this portion of the roof covering to the sheathing. On the flatter portion of the roof, a built-up covering was used consisting of four plies of asphalted felt with each ply mopped with hot asphalt. Of recent date, a new roof of mineralized-surface, asphalted felt shingles, was placed over the original roof covering.

• **Hangar converted to wood plant**—After the war, the Navy leased the airport and the two hangars to Tillamook County, which, in turn, has subleased the buildings. The hangar was occupied by a lumber and plywood operation, with the contents consisting of machinery for remanufacturing lumber—saws, planers and the like. This installation also included a plywood plant having a veneer lathe, veneer dryer, glue press and other necessary machinery. And stocks of lumber and plywood were in the building.

Veneer dryers, using relatively high temperatures are a potential source of fire in plywood plants. Hence, automatic deluge-type sprinklers are built into the equipment. The moisture and residue from the dryers is vented through a duct to outside atmosphere. For these particular kilns, the vent ducts had to be run horizontally and through the side of the building—a vertical vent being impractical due to the great height of the structure. As the horizontal run of the ducts reduced natural draft, an exhaust fan was installed in the duct 10 ft to 12 ft inside the wall of the building.

The fire started on the residues deposited in the short portion of one of the ducts between the exhaust fan and the end of the duct at the outside of the building. Since there was no pilot sprinkler head at the end of the duct, the fire burned freely until noticed. Then a manual release on the sprinkler system was operated, but by this time, a strong wind, blowing toward the hangar, had directed the torch-like flame from the duct against the side of the building and ignited the roof covering.

Fire fighting began with hoses attached to outside hydrants, later supplemented by fire department pumpers. However, the height of the building would only permit an attack at the base of the fire with the hydrant pressure. Before long the fire had swept straight up the side of the building and had spread downward. It fed on the untreated catwalk on top of the monitor and on sawdust and shavings, which had been windswept to the top and packed under the catwalk. Fire also attacked dust and debris in the valley made by the intersection of the monitor and roof.

Men working with hydrant hoses and pumper streams from the ground and from the top of two platforms supporting dust-collector bins just outside the hangar, beat down the fire on the lower part of the roof. But they were only able to reach about one-third of the height with their hose streams. Another crew was on the inside trying to reach the underside of the roof with pumper streams, but because of the height could only get brief spurts of water up to the top part of the inside fire area.

When pressures were raised to reach higher, the men could not hold the hoses, and none of the local equipment included any form of turret nozzle. But after about an hour, hose lines reached crews on the roof and the blaze was controlled.

In the meantime, the fire had charred through the treated 2-in. roof decking at about mid-height of the building. This was the area most difficult to reach with hose streams. The opening acted like a flue so that a portion of the flame from the burning roof billowed inside the hangar and was exhausted along the monitor. This flame on the inside probably ignited the runway in the monitor, which was slowly destroyed along its length. It is known that this runway was not pressure treated with fire-retardant chemicals, but it has been reported as having been brush treated with fire-retardant paint. If so, the effectiveness of this coating probably had deteriorated in the moist, coastal climate of Tillamook County.

Even after the major roofing blaze was knocked down, there remained

slow, slippery work on the sloping sides of the building, using safety ropes and hose, to put out the smoldering fires between the layers of the roofing. The fire was dead out seven hours after it started.

• **Lessons learned**—A study of the fire damage shows the effectiveness of fire-retardant treated lumber. The treated, wood roof deck proved to be a good fire barrier, even though about 3,000 sq ft of the 2-in. planking was charred through. This, plus char of varying depth, required the replacement of 15,000 sq ft of the 2-in. plank deck. And 1,500 sq ft of ½-in. plywood was used to restore the thickness in less charred areas. A small amount of 2x6 material was nailed to the sides of the top of some rafters for a nailing surface for replacement of the plank deck. Other replacements included the runway in the monitor, two of four hose houses, 400 squares of roofing, and the 2-in. pipe handrail along the top, which was bent and twisted from heat.

No other repairs were required, since no structural damage occurred in rafters, purlins, bracing and other parts despite the fact that flames swept through the charred hole in the roof.

More than 10 years ago, a group of these hangars was subjected to fire after collapse due to hurricane. This happened on Sept. 15, 1945, at the Naval Air Station, Richmond, Fla. Aircraft and automobiles parked in these hangars at the time were consumed by fire fed by fuel from their tanks. The reports of that collapse and resulting fire show that the fire-retardant treated lumber was consumed in the area exposed to the flame of other burning materials. But it did not spread into the tumbled mass of collapsed, treated wood beyond those areas.

As the Richmond structures were a total loss from hurricane damage, even before the fire started, no conclusions were reached regarding the structural protection afforded by the fire-retardant treatment. Both of these fires support the fact that lumber pressure-treated with fire-retardant chemicals will not maintain its own combustion, and that it will resist the spread of fire. Like untreated, heavy timber framing, it can be consumed only by a severe-exposure fire of long duration.

This suggests that the 1949 edition of the National Building Code, promulgated by the National Board of Fire Underwriters is conservative in recommending an allowable increase of 33⅓% in the areas of one-story buildings of heavy timber construction, ordinary construction, and wood-

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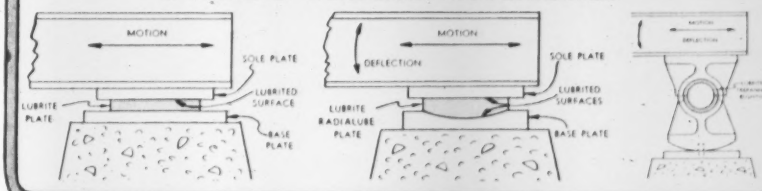

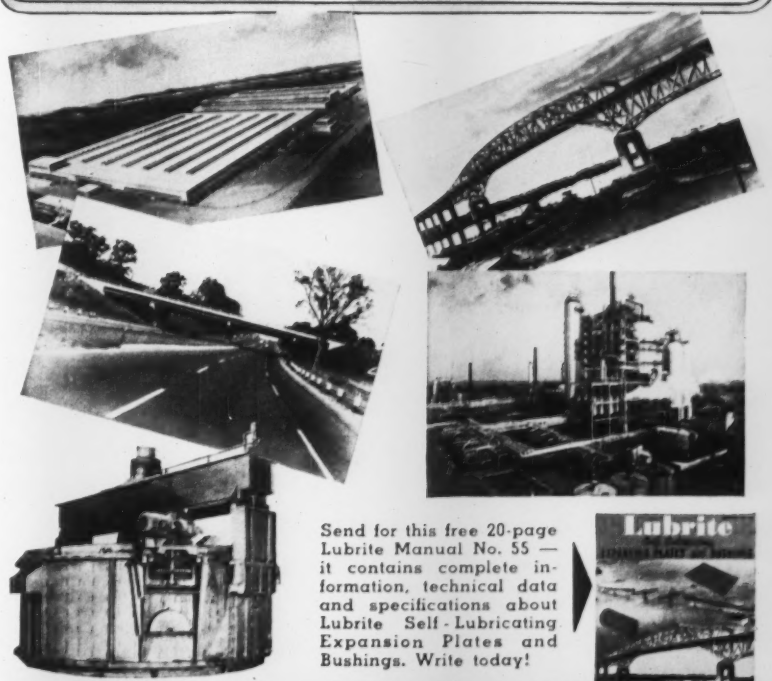

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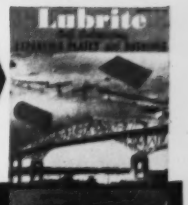

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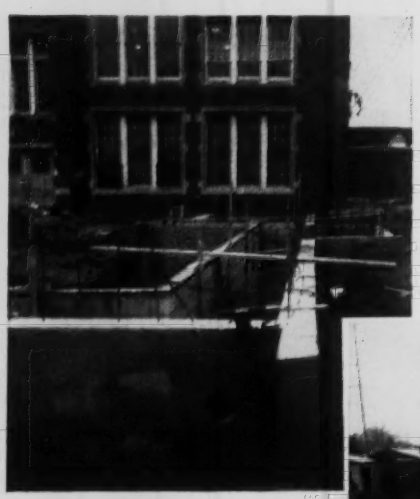

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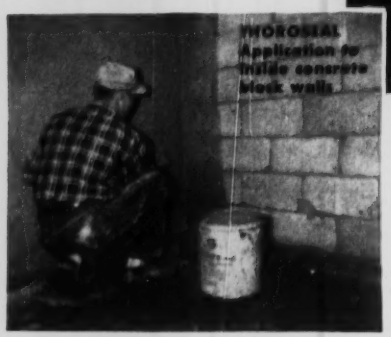

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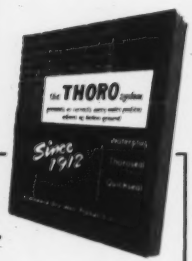

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frame construction, when all the wood parts are of approved fire-retardant treated lumber. In some sections of the country, insurance-rating bureaus use schedules allowing credits in fire-insurance rates when fire-retardant treatments are used. Even so, it now appears that the practice should be more universal and that a review of existing conservative, insurance credits may be in order.

On-site investigations were made by F. L. Mattson, manager, insurance department, West Coast Lumbermen's Assn., and D. F. Kinder, consultant to Timber Structures, Inc., and acknowledgement is made to their assistance. J. J. Johnson, manager of the property at Tillamook, has been at the station since its early days, and aided in directing the volunteer fire fighters. His account of the fire and knowledge of the construction was very valuable in preparing the reports used herein. The original plans and specifications, used by Timber Structures, Inc., in fabrication of the structural framing of the Tillamook hangars, were used for the detailed information about the structure.

Plans Made to Bring Colorado River Water to Arizona Areas

Customers of the Arizona Power Authority have voted approval for the authority to embark on first steps to bring Colorado River water into central Arizona. This is part of Arizona's do-it-yourself hope to collect on its allotment of the Colorado supply.

As proposed by Gov. Ernest McFarland, Arizona's plan would call for amendment of the power authority act to include water as well as power. Then the authority could eventually build Bridge Canyon Dam and the necessary aqueducts to bring water to the Salt River and Casa Grande Valleys in Central Arizona—a distance of about 300 mi.

The first step would be for the power authority to make engineering surveys of the Bridge Canyon Dam and Parker-Granite Reef Aqueduct as to cost.

Chlorination of Sewage Approved for Emergency

The California Regional Water Pollution Control Board at San Diego has approved an emergency program for chlorination of sewage discharged by the city into San Diego Bay.

The Coronado shore of the bay has been quarantined and other areas have been ordered posted. The program will require an investment of $80,000 for equipment and an annual operation cost of $60,000.

The smell will always be there, but . . .

The Impact Can Be Softened

Consultants have reported their findings on why the Bromley Sewage plant, operated by Sanitation District #1 of Kenton and Campbell counties, Kentucky, is such an odor producer (ENR July 14, 1955, p. 44).

Placed in operation July, 1954, it was closed by court order on June 1, 1955.

The report was prepared by J. Stephen Watkins, consulting engineer of Lexington, Ky., and reviewed by Greeley & Hansen of Chicago.

The consultants' conclusion is that the plant and collection system designed by Vogt, Ivers & Seaman, are basically sound. Odor of raw sewage and certain other attendant odors are inherent in the sewage treatment process. These odors, however, need not be noxious, offensive or disagreeable, and are usually evident only in the immediate vicinity of a sewage treatment works, although meteorological conditions may cause variations now and then.

Several features of this particular plant are said to worsen the odor problem: Location in a closely built-up area; use of raw sludge incineration; a long collection system and the condition of contributing sewer systems; plus certain industrial wastes that are involved.

The report states alleged offensive and disagreeable odors have been caused primarily by release of hydrogen sulfide from the raw sewage and/or have emanated from the sludge handling process. Methods of treating sludge at the plant are still under study by consultant Watkins.

The report suggests reducing odors with masking agents and by maintaining a temperature of at least 1200 F in the incinerator stack.

Watkins states, and Greeley & Hansen agree, that a further refinement of the raw sludge incineration process or a major revision to provide sludge digestion will be necessary both to alleviate the odor from this source and remedy all the major operating problems that go with sludge handling facilities.

Capital cost of various remedial measures is estimated at $164,275, not including any major revisions of the sludge handling system.

Here are some recommendations set out in the report:

1. Procure necessary equipment for application of an odor masking agent in the grit chamber on a trial basis when plant operation is resumed. Also acquire necessary equipment for one portable trailer-mounted unit for applying the agent at selected points in the collection system.

2. Provide for sectionalizing the influent flume to avoid the possibility dead water areas.

3. Utilize the existing deodorizing installation in the filter room at all times when sludge is being filtered. Also, be especially sure exhaust fans are in use.

4. Reduce the capacities of three of the raw sewage pumps to 7.5 mgd each instead of 11.9 mgd by reducing the diameter of the pump impellers.

5. Construct a new Parshall flume in the effluent line from the settling tanks and provide remotely controlled indicating-recording-totalizing meters in the chemical building and in the office building; also provide for sectionalizing the influent flume to the pre-aeration tanks.

6. Construct an entirely new system of effluent launders for the settling tanks and revise the plant effluent line.

The report also recommends, as to mechanical problems, the installation of conventional scraper and bucket-elevator type grit removal equipment in each grit chamber, plus revision of the control equipment for the sewage pumps.

One recommendation in the report already is being carried out. The district, at a cost of $25,000, has under way additional diversion structures for two lines leading to a river crossing in the system and repair of the crossing.

The report further suggests construction of a pump station and force line to handle the sewage collected by this portion of the system and to replace a second river crossing. The estimated cost is $40,000.

The report said the presence of septic sewage in the sewers of various communities is a matter of deep concern. It is apparent that this septicity is brought on by improper design or maintenance of many of the sewers, particularly the older ones. Many instances of stoppage and improper flow have been noted.

Provided these sewers were owned by the district, immediate steps should be taken to make a complete survey of all contributing sewers and institute a program of repair and replacement.

The report also suggested that the by-pass manhole at the head of grit chamber should be carried further toward river so that it will discharge below the level of river at normal pool.

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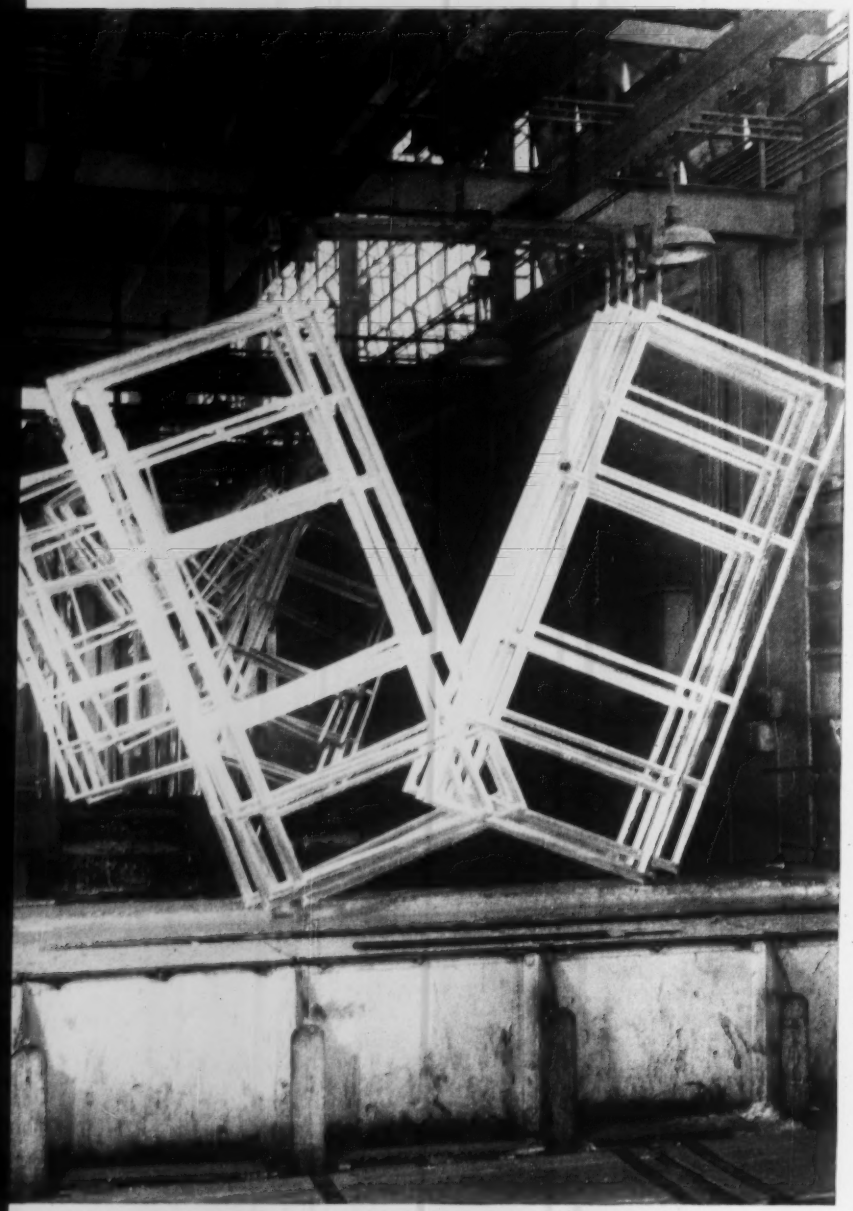

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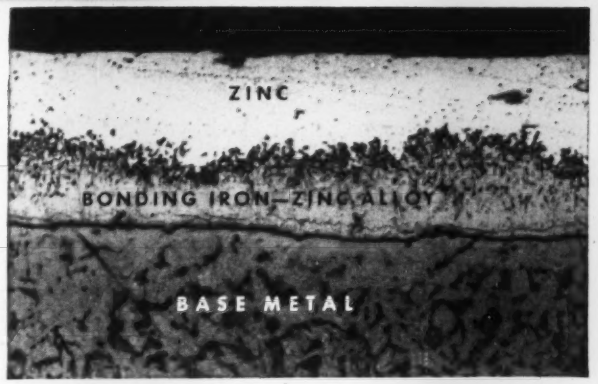
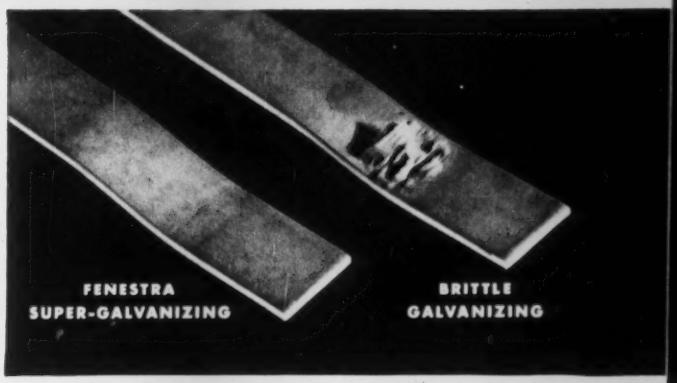
Fenestra Galvanized-Bonderized Industrial Windows used in this building for John Hassall, Inc., Westbury, New York, to reduce window maintenance costs. Ask your local Fenestra representative for information on the complete line of Fenestra Industrial Windows. *Architect-Contractor* —Winninger Construction Corporation, New York.



This microphotograph shows how the zinc coating alloys with the steel base. Fenestra's Galvanized-Bonderized Finish is *self-healing*—small breaks in the surface are automatically closed by sacrificial action of the zinc, leaving the steel protected underneath!



Bend Test demonstrates the durability of Fenestra Super Hot-Dip Galvanizing. A gradual iron-to-zinc transition from the base metal, through zinc-iron alloys, to the outer layer of relatively pure zinc assures a lifetime bond. Ask your Fenestra representative for this demonstration.

GALVANIZED-BONDERIZED FINISH

Exclusive Fenestra Process gives you steel-strong windows with a self-healing lifetime finish that needs no paint!

Many people ask us, "How long can Fenestra Galvanized-Bonderized Steel Windows go without painting?"

The best answer we know is to refer the inquirer to some of our older installations. Like the Fenestra Windows in Mill No. 2 of the American Woolen Company, Shawsheen Village, Massachusetts. They were installed unpainted 35 years ago and haven't been painted since, inside or out. They're still in excellent condition in spite of extremely high humidity conditions in this building.

Or, the Fenestra Windows in the Galveston Wharf Company building, Galveston, Texas. These windows were installed unpainted in 1926, have never been painted and are in excellent condition after 30 years of fog, pounding storms and destructive salt spray and air.

The pictures on these pages show you why Fenestra Galvanized-Bonderized Windows need no paint. They also show a couple of our customers who will never again need to worry about costly window maintenance.

When you combine all the advantages of the strength of steel with Fenestra's Super Hot-Dip Galvanizing, the result is a window that gives you the lowest lifetime window maintenance cost. And, best of all, the Fenestra Galvanized-Bonderized Finish costs no more than the average 2 coats of field paint.

This lifetime finish is available on all types of Fenestra Windows—Intermediate, Industrial and Residential. Ask your local Fenestra representative for complete information or mail the coupon below.

Fenestra | GALVANIZED-BONDERIZED INDUSTRIAL STEEL WINDOWS

YOUR SINGLE SOURCE OF SUPPLY FOR
WINDOWS • DOORS • BUILDING PANELS

Fenestra ER-2286 East Grand Boulevard Detroit 11, Michigan

Please send complete information on Fenestra Galvanized-Bonderized Steel Windows.

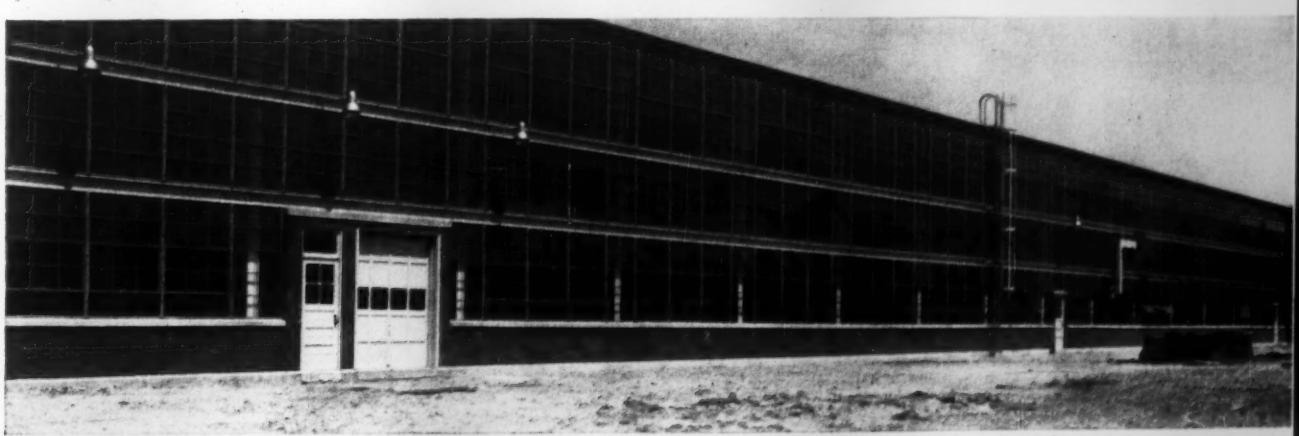
Name _____

Firm _____

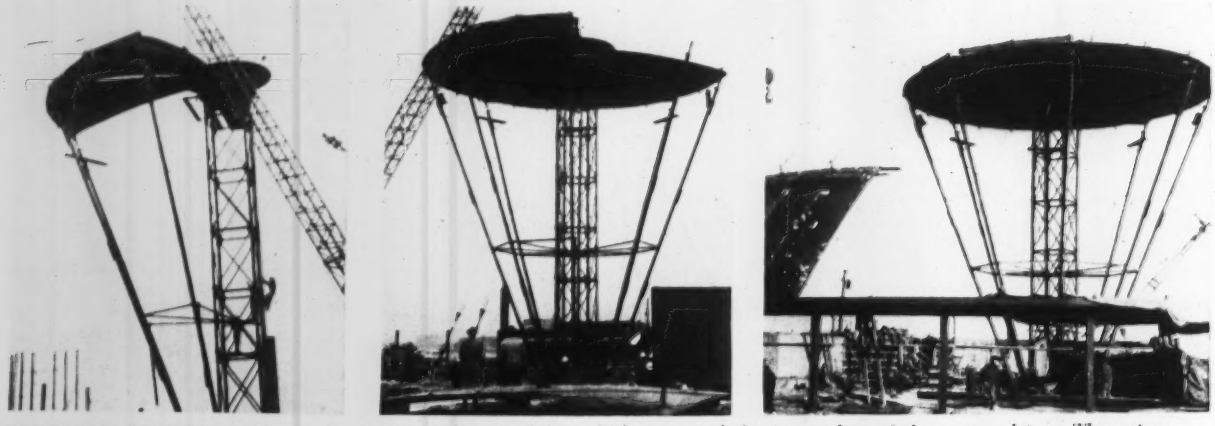
Address _____

City _____ State _____

Oil Gear Company, Milwaukee, Wisconsin, uses 672 Fenestra Industrial Steel Windows with Fenestra Galvanized-Bonderized finish. Painting and other maintenance costs are virtually eliminated. *Engineer and Contractor*—Klug and Smith, Milwaukee, Wisconsin.



Outside The Styling Building in the General Motors Technical Center, Detroit, appears as a huge, shiny hemisphere. The dome is composed of steel plates covered with large aluminum shingles.



ERECTION STARTED with a temporary central mast (left), which supported the inner edges of the crown plates. The outer edges were carried by shores (center). Next, plates for the base of the dome were set on the tension ring (right).

Light-Steel Double Dome Roofs an Auditorium

Newest addition to the General Motors Technical Center in Detroit is the Styling Building, a circular auditorium topped by a 107-ft dome of steel plate. From this roof is hung a domed ceiling of sheet metal.

The Styling Building was designed to exhibit new GM automobiles to best advantage. Other structures in the Technical Center include engineering staff, research laboratories and shop buildings (ENR Nov. 1, 1951, p. 55).

The outer dome, made of ⅜-in. mild-steel plate, braced by small meridional ribs, has a 65-ft clear height above floor level at the center. It rests on a 12x14-in. hollow steel tension ring 10 ft above grade. Supported by 8x12-in. hollow steel columns spaced 14 ft c-c, the tension ring is shaped to serve also as a gutter.

The inner dome offers a clear height at the center of 55½ ft. It is made of 12 and 14-ga perforated (14% open) mild steel. On top of it is 3 in. of acoustic insulation. Light from lamps around the base of the dome has an intensity of 100 ft-c 3 ft above the floor, after reflection from the ceiling.

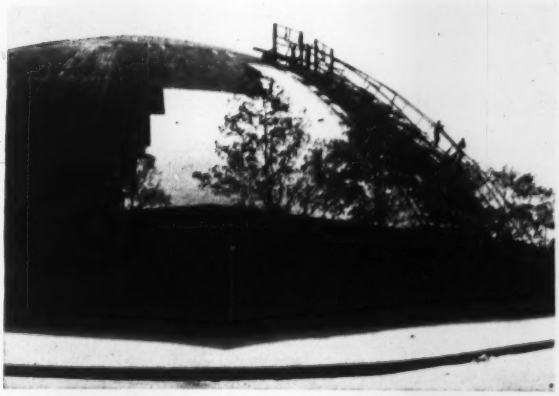
The outer dome is covered with glass-fiber insulation, a waterproof membrane and 9x5-ft aluminum shingles, 0.082 in. thick. The metal has a 4S core and a nearly pure aluminum cladding.

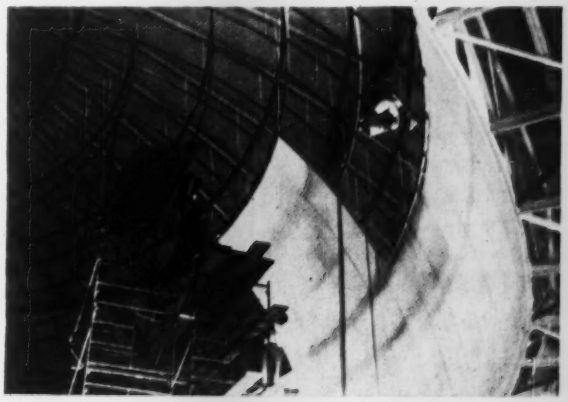
Aluminum panels form the outer walls. Interlocking joints are made tight with neoprene gaskets.

Eero Saarinen & Associates, Bloomfield Hills, Mich., are the architects. Smith, Hinchman & Grylls are the engineers. Bryant & Detwiler is the general contractor, and Chicago Bridge & Iron Co. erected the welded dome.

Inside A brilliantly illuminated domed ceiling caps a column-free auditorium and exhibit area, where new automobiles are displayed. The ceiling is made of perforated sheet metal, backed with acoustic insulation.

COMPLETION OF THE BASE RING was followed by erection of the intermediate ring. The plates were joined by welding. This erection method was used because no crane was available that could set the crown plates from outside.





ALUMINUM SHINGLES were placed from a rolling platform (left) and were attached with 1½-in. studs welded to the steel dome. The top ¼ in. of the stud is aluminum, the rest stainless steel. Inside, the domed sheet-metal ceiling was attached to steel rings hung from the outer dome (right). Finally, lamps were placed along the base of the dome to bounce light off the ceiling.

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MORE THAN GRATING
When You
SPECIFY IRVING

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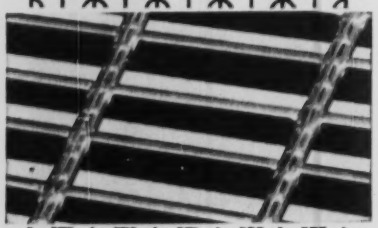
Over 50 years of engineering skill and production know-how from the FOUNDERS of the open-grid flooring industry.

YOU GET...
A "fitting" grating for every purpose.

YOU GET...
Riveted, pressure-locked and welded Irving gratings in steel; and Irving aluminum gratings in riveted and pressure-locked types, designed for your industrial flooring problems.



YOU GET...
Irving engineering procedures which assure precisely fabricated panels designed from your floor plan or sketch for quick, easy installation.

YOU GET...
Prompt delivery anywhere.

IRVING SUBWAY GRATING CO., INC.
ESTABLISHED 1902

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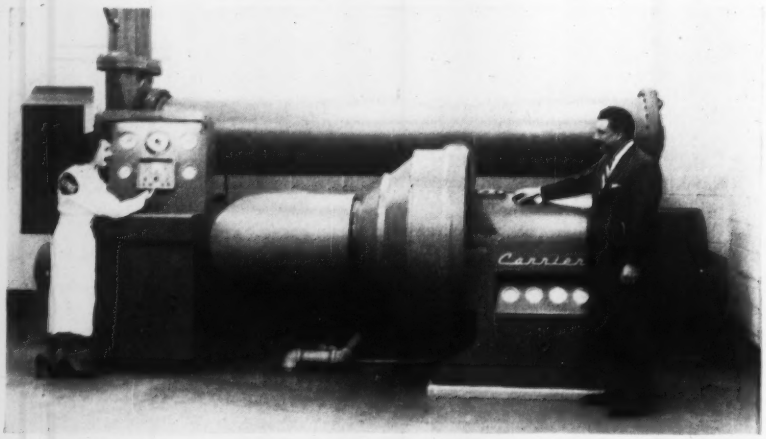
5063 27th St., Long Island City 1, N. Y.
1863 10th St., Oakland 20, California

New Products



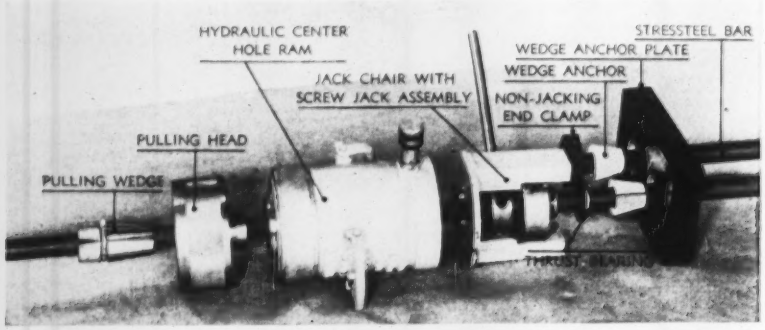
Automatic, Vibrationless Compressor

A new refrigerating machine, designed to chill water for air conditioning systems, features a single, factory-sealed casing for the centrifugal compressor and its electric motor drive. This eliminates on-the-job assembly of these components.

Said to operate very quietly and without vibration, the unit requires no foundation and can be installed on the roof or an upper floor of a building.

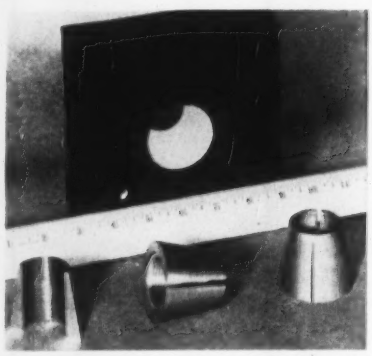
After the pushbutton that starts the machine is pressed, electronic controls take over. They automatically adjust the cooling output according to the load by hydraulically actuating a precision assembly of pre-whirl vanes,

(Continued on page 51)



Wedge Grip Anchors Prestressed Bars

A wedge-type device has been developed for anchoring high-strength steel bars used for prestressing concrete. Eliminating bar threading, the Stressteel Wedge is a short, round sleeve, tapered and smooth on the outside, but scored inside with sharp teeth. Its inside diameter is large enough to allow the sleeve to be slipped on the bar. A lengthwise split, end to end, is left open in manufacture so that the unit can be constricted to develop a grip. Constriction is effected by jacking the device into a tapered hole in the bearing plate. Truscon Division, Republic Steel Corp., Youngstown 1, Ohio.



Allis-Chalmers

model D

THE LOW-COST MOTOR GRADER THAT OFFERS

more of everything...

more PRODUCTION-BOOSTING FEATURES

Choice of Allis-Chalmers engines

GASOLINE — 50 brake hp. Bare grader weight —8,800 lb. Four forward speeds to 25.6 mph, one reverse to 3.3 mph.

DIESEL — 50 brake hp. Bare grader weight — 9,350 lb. Four forward speeds to 25.2 mph, one reverse to 3.2 mph.

ROLL-AWAY moldboard rolls the load instead of pushing it, moves more dirt, uses less power.

Plus one-piece tubular frame, tandem drive, real operator comfort, hydraulic blade lift.

USEFUL OPTIONAL FEATURES

Power circle turn for faster, easier, better control of blade . . . turns 135 degrees.

Leaning front wheels with heavy-duty axle, for better control in close quarter-work.

Hydraulically shiftable moldboard to speed work around obstructions. Shifts 16 in. each way.

Special large tires for added traction, long wear. Front (7.50-20 or 8.25-20) and rear (8.25-20).

more JOB-MULTIPLYING ATTACHMENTS

Hydraulic scarifier, mounted amidships for maximum effective ground pressure.

Shoulder maintainer for safe, one-pass operation. Also available: one-pass windrow eliminator.

Rear-mounted 5/8-yd loader for fast, low-cost handling of materials.

plus snowplows, completely enclosed standup cab, hydraulically operated mower.

more SATISFIED USERS

Since its introduction in 1949, thousands of satisfied owners have *proved* the usefulness and low-cost versatility of the Model D on all kinds of construction and maintenance.

Call your Allis-Chalmers Construction Machinery Dealer for a demonstration today!

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

ROLL-AWAY is an Allis-Chalmers trademark.

New names and revised stress values

FOR DOUGLAS FIR AND WEST COAST HEMLOCK

Important changes have been made in the West Coast lumber grading rules. Essentially, the rules have been redesigned for the buyer and consumer of lumber, rather than the professional grader. These changes make it easy to understand the use of lumber grades and will help you specify the correct lumber for every building need.

The basic difference between the old and the new is the change from grade numbers to grade names. Beginning March 15, 1956, grades will be known as CONSTRUCTION (formerly No. 1), STANDARD (formerly No. 2), UTILITY (formerly No. 3), and ECONOMY (formerly No. 4).

Quality has been improved, resulting in higher fiber stress values. For your convenience, both the old and new grades as well as the old and new stress values are shown in boxes on this page.

DOUGLAS FIR

Joists and Planks

NEW NAME	OLD NAME	NEW STRESS	OLD STRESS
Select Structural	Select Structural	1900 psi	1900 psi
Construction	No. 1	1500 psi	1450 psi
Standard	No. 2	1200 psi	1100 psi

Beams and Stringers

Select Structural	Select Structural	1900 psi	1900 psi
Construction	No. 1	1500 psi	1450 psi

Horizontal shear values are 120 lbs. per square inch for all grades except Standard. Standard grade has an assigned horizontal shear value of 95 lbs. per square inch.

WEST COAST HEMLOCK

Joists and Planks

NEW NAME	OLD NAME	NEW STRESS	OLD STRESS
Select Structural	Select Structural	1600 psi	1600 psi
Construction	No. 1	1500 psi	1450 psi
Standard	No. 2	1200 psi	1100 psi

Beams and Stringers

Construction	No. 1	1500 psi	1450 psi

Horizontal shear values are 100 lbs. per square inch for the Select Structural and Construction grades and 80 lbs. per square inch for the Standard Grade.

For both species two new stress grades have been added. They apply to material 2" to 4" thick and 4" wide and answer the increasing demand for a stress grade 2x4. The assigned stress values are 1500 lbs. per sq. in. and 1200 lbs. per sq. in., and the grades will be identified by their stress values. These grades are specially selected for strength. They are not customarily available as stock lumber items.

As before, Joists and Planks and Beams and Stringers have assigned stress values in compression parallel to grain, and in addition, fiber stress values in bending have been assigned to Posts and Timbers.

For your free copy of Rules 15 write to:

WEST COAST LUMBERMEN'S ASSOCIATION

1410 S.W. MORRISON, PORTLAND 5, OREGON

Dual-Tank Agitator Feeds Mix to Gun

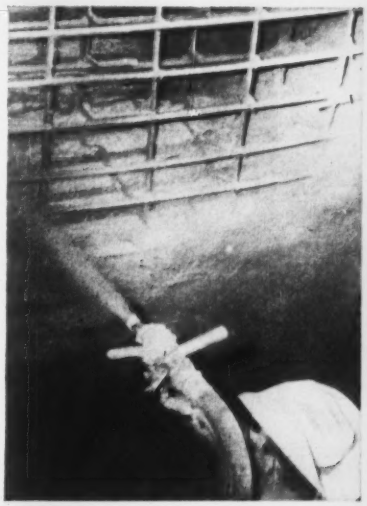
Among advantages claimed for a new air-method of applying concrete are a controlled water-cement ratio, less than 5% rebound, and no sand pockets.

"True Gun-All," a rubber-tired unit with dual tank chamber, feeds a wet mix through a hose to the point of application. Compressed air is supplied by a separate compressor.

The purpose of two tank chambers is to allow one 7-cu ft chamber to be opened and recharged while the other is being utilized. Output capacity is 3¼ to 4 cu yd per hour. Air must be supplied at a minimum value of 125 cfm at 80 psi. The air is controlled at the nozzle where the high pressure stream is fed into the center of the material.

Capable of handling aggregates up to ¾-in., the unit can be used to apply concrete, refractories, sand plaster, cement stucco, insulating concrete and acoustical plaster. The rubber-tired device has an overall length of 82 in. It weighs 2,300 lb empty and can be mounted in a 1½-ton truck.

Other features include: (1) water meter to control proper amount of water, (2) air shut-off at the nozzle, eliminating the possibility of accidents caused by whipping material lines, (3) mixing blades in dual chamber equipped with rubber wipers to cut clean-up time. True Gun-All Equipment Co., 122 N. Kirkwood Road, St. Louis 22, Mo.



which regulate the flow of refrigerant gas into the two high-speed rotors of the compressor. The vanes provide no-load starting by remaining closed until the motor reaches normal speed. Refrigerant gas circulates through the motor housing continuously to cool it.

The integrated unit is supplied with a console "nerve center," which includes the automatic electronic controls and push button starting and stopping mechanism. It is now marketed in 30 capacities ranging from 100 to 325 tons. Carrier Corp., Syracuse 1, N. Y.

Swinging Holder for Plans

The manufacturers of a friction-type plan clip have developed a wall rack for holding drawings. Brackets pivoted within a wall plate support clips that, in turn, hold the plans, enabling them to be swung back and forth. If wall mounting is not desired, a rolling steel stand with built-in wall plate is available. Plan Hold Division, Air Comfort Co., 5204 Chakemco St., South Gate, Calif.

(New Products continued on page 54)

Neenah FOUNDRY COMPANY

construction castings

of sound quality... solid value

Patterns for
15,000 different Gray Iron Castings for
• Highway • Building • Communication
• Utilities • Industrial • Public Works
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Another

"The performance of this machine speaks for itself," says Sidney Steel, paving superintendent of the Austin Paving Co. "Our records tell us this machine has long since paid for itself and it still has years of work left in it."

RECORD OF PERFORMANCE

Austin Paving Company of Dallas, Texas put down 5,580 sq. yards of concrete in one day with single Flex-Plane Finisher!

Speed, power and flexibility, designed into the Flex-Plane, enabled it to easily keep pace with a dual drum paver while making two passes over the roadway, without benefit of a spreader.

THE HELTZEL STEEL FORM AND IRON COMPANY • WARREN, OHIO •

THE HELTZEL ROAD JOINT MACHINE COMPANY • WARREN, OHIO •

WORLD'S LARGEST BUILDER OF CONCRETE FINISHING EQUIPMENT

9883

Paving Record for...

Flex-plane

● A Flex-Plane Portable Finishing Machine recently spread and finished 1860 lineal feet of 27-foot width street, with 6" integral curbs on both sides, in a single day for the Austin Paving Company of Dallas, Texas.

"Taking the concrete as it came from a single dual-drum paver, the Flex-Plane machine spread and finished it to a degree that required a minimum of hand finishing. It's a great piece of equipment!" says Sidney Steel, Paving Superintendent for Austin.

The Austin machine was equipped with integral curb attachments on both sides, and according to Steel, this feature alone saved them many pouring hours.

It's this kind of performance that has made the Flex-Plane, the industry's fastest selling and most desired finishing machine. Why not let our sales-engineers put you in touch with a Flex-Plane user in your area. His story will convince you that, if you do any roadway or runway paving at all, you can't afford to be without a Flex-Plane.

THE FLEXIBLE ROAD JOINT MACHINE COMPANY
6600 THOMAS ROAD • WARREN, OHIO

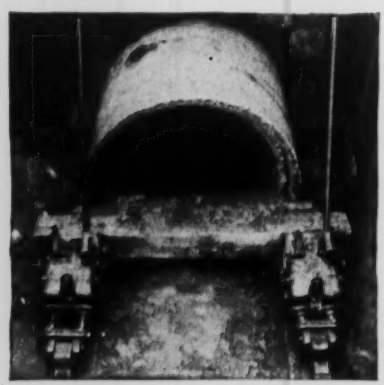
Note how Flex-Plane's improved screed rolls the concrete into position. There is no shearing or pushing action. This eliminates a common cause of spalling. Note, also, the integral curbing attachment that further reduced costs for Austin.

SAVE HOURS,

CUT COSTS ON YOUR

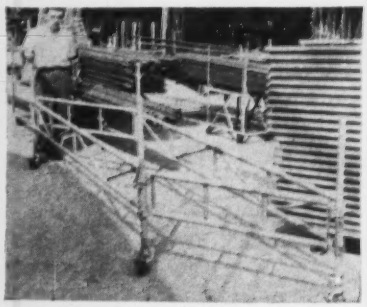
PIPING JOBS

PUSH PIPE UNDER STREETS, TRACKS, walks, floors and other obstacles with a GREENLEE Hydraulic Pipe Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes—model shown above for pushing ¾ to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump also available for extra ease and speed of operation.



GREENLEE

Write today for descriptive literature Greenlee Tool Co., 2223 Columbia Avenue, Rockford, Illinois U.S.A.



Scaffold Changes Angles To Squeeze Through Doors

A rolling scaffold is now marketed with hinged corner posts that enable its 5 x 10-ft frame to squeeze through a 2-ft door. With planks removed, the tubular steel frame can be easily distorted from rectangular shape to a narrow parallelogram and rolled through narrow openings. Once through, the frame is made rectangular again.

Adjustable to a maximum height of 10 ft, the basic unit (photo) provides more height when placed on top of a frame made by the same manufacturer. The basic unit is also available in 10-ft width. SUPERIOR SCAFFOLD CO., 5614 BANKFIELD AVE., CULVER CITY, CALIF.

Strong Jointing Material Made for Plastic Pipe

An inexperienced three-man crew recently laid 3,800 ft of 3-in. plastic pipe in one hour and 45 minutes. The 30-ft lengths of pipe and Schedule 80 fitting were joined by a new cement, credited for the speed with which the line was laid.

More important than the speed of the work was the fact that the joints did not leak when the line was completed. The new cement for joining PVC (polyvinyl chloride) pipe fittings and flanges is claimed to be as strong or stronger than the pipe itself and able to bridge a greater diametral gap than previously available bonding agents.

(*Continued on page 56*)

Electronic Thinker Fits Desk Space

Smaller than an average desk, a new electronic computer is claimed to have the memory capacity and problem-solving ability of larger, more expensive machines. Costing $29,800, the LGP-30, general purpose computer, can add, subtract, multiply, divide and make decisions as instructed by internally stored programs. It operates from a standard 115-v, 60-c outlet.

Key feature of the LGP-30 is its memory unit, a magnetic drum capable of storing 4,096 words, 31 digits in length. These are stored along 64 tracks around drum's circumference.

The input-output device for the LGP-30 is an electric typewriter that is designed to both produce and be operated from a punched paper tape system.

In addition to relatively low-cost and easy operation, other advantages claimed for the computer include its rapid mastery. The engineer with a "good grasp" of computing techniques can learn to operate it in as little as 30 min, the non-computer-schooled engineer in three days. LIBRASCOPE INC., 808 WESTERN AVE., GLENDALE CALIF.

Rear-Dump's big wide bowl with low-entry makes easy "target" for shovel operator.

Speed 350,000-yd. job

on U. S. Route 460 with 3 Tournapull Rear-Dumps

To widen U. S. Route 460 in Campbell County, Va., from 2 lanes to a 4-lane divided highway, Talbott-Marks Company, Inc., Clarksville, Va., has 350,000 yds. of shale and rock to haul from cuts to fills. Equipment brought in by contractor to handle job included 3 C Tournapull Rear-Dumps and one 1½-yard shovel.

Production figures on a typical 5000′ cycle showed each C Rear-Dump averaged 10 trips per hour. Loads per machine averaged 10 yds. Each rig hauled 100 yards per hour to total 300 yards for the three. Haul route was in fair condition with 7% return grades. Speed and maneuverability of Le-Tourneau-Westinghouse units kept them well ahead of loading shovel. 90° turn-ability of Rear-Dump lets operator swing hauler quickly into position at shovel for elimination of spotting delays.

Owner A. W. Talbott says units are "Very satisfactory." Two of his Rear-Dumps were driven 354 miles to this job from Hereford, Md., in 18 hours, where they had worked on a 300,000-yd. rock section of the Baltimore-Harrisburg expressway.

If you have a hauling problem, it will pay you to investigate the Le-Tourneau-Westinghouse Rear-Dump. Write or call us for further production studies and specifications. There's no obligation.

Passing on incline, Rear-Dumps speed along haul route on big, single, low-pressure tires.

There's a size to fit your needs

Model	Capacity	HP	Overall Length
D	11 tons	138	25′2″
C	22 tons	208	30′
B	35 tons	293	37′3″

Model	Width req'd, non-stop 180° turn	
	Travel position	Dump position
D	24′8″	19′2″
C	28′8″	20′8″
B	35′	27′

Check these advantages as applied to your job

Hauls anywhere — Big single low-pressure tires let Rear-Dumps safely travel narrow haul roads, paved highways, city streets . . . haul cross-country over roughest terrain, through muck and soft fills.

Turns in less space — This Rear-Dump makes 180° non-stop U-turn by power steer in less than its own length. It eliminates time normally wasted see-sawing to back into or turn in narrow quarters.

Reduces maintenance — Because these Rear-Dumps have no jack lines, no long drive-shaft, no frame, subframe, springs or tie rods, most common troubles of conventional rear-dump haulers are eliminated.

Dumps fast, clean — Flick of switch activates hoist motor. Body lifts quickly to any desired angle for spreading on run. At full dump position, bowl-lip is behind rear wheels so dump can be made clean over bank. Streamlined body sheds material readily.

Cuts weather delays — Power-transfer differential automatically applies power to drive wheel on firmest footing . . . pulls unit through mud, sand, soft materials which stop ordinary haulers. It's a Tournapull exclusive.

Resists body shock, damage — Three-layer, all-steel, grid-type bowl with tool-steel floor resists loading shocks. Big, wide bowl opening (8′9″ x 10′10″) is easy target for any loading unit.

Improves safety — Multi-disc air brakes have more braking surface on one wheel than most haulers have on all 4. Low center of gravity, good visibility, front-wheel drive, easy control all contribute to maximum safety.

Delivers full power — Torque converter (optional in C size) automatically balances load and torque so you get full horsepower always. Lugging is reduced; shocks in transmission and final drive virtually eliminated.

Reduces fatigue — Big low-pressure tires, 24.00 x 25, and air-foam cushion seat smooth out ride for operator. Electric push-buttons control power steer and 2-way power dump. Eliminated is loss of momentum and all manual work of fighting balky levers.

Insures future earnings — Behind Tournapull prime-mover, you can interchange rear-dump with scraper, bottom-dump, crane, flatbed. These trailing units lower your investment, let you handle any future job efficiently, help you keep your Tournapull profitably busy the year-around.

Tournapull—Trademark Reg. U.S. Pat. Off. R-929-H-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Save time, costs, property...with HYDRALT* ASPHALT (Clay-Type) Coatings

..."one coat" protection for all around the plant

Don't let moisture, fumes, smoke and weather attack your property and equipment. Protect your metal and masonry . . . your insulating materials . . . with *one* coat of Flintkote Hydralt.

Yes, even one coat of Hydralt gives thick film, more economical protection against corrosion, rust and the effects of moisture infiltration than 8 or 10 coats of paint. And think of the time savings, too.

Hydralt Protective Coatings are unique (clay-type) asphalt emulsions. Films about 3/64" thickness have provided completely satisfactory resistance to weather in industrial atmosphere for over 24 years.

These Hydralt coatings are reinforced within themselves . . . will not crack, craze, or alligator under exposure. Will not soften or flow under heat. Won't sag or peel off.

They are odorless. Non-flammable to apply by brush, spray or trowel.

Flintkote's line includes the right products for your protective coating needs. For light reflective surfaces . . . Asphalt base Aluminum Paint. For oil or grease resistance...ORTAR† Emulsion Coating.

Want more information about these products? Just write...or look us up in Sweet's.

Over 50 years of specialized experience . . . by phone, mail or personal call. No obligation.

*Reg. U. S. Pat. Off.
†Trademark of The Flintkote Company

Protect structural steel with Flintkote Hydralt Coatings.

Masonry structures resist weather better with Hydralt.

Apply Flintkote Aluminum Paint over Hydralt, for light color.

Protect insulating materials from weather with Hydralt.

Keep moisture out of foundation walls with Hydralt.

Keep dampness out of interiors with Hydralt.

FLINTKOTE

THE FLINTKOTE COMPANY
Industrial Products Division
30 Rockefeller Plaza, New York 20, N.Y.

Boston • Chicago Heights • Detroit
Los Angeles • New Orleans • Philadelphia

In Toronto, Ont.:
The Flintkote Company of Canada, Ltd.

In London, England:
Industrial Asphalts Company, Ltd.

. . . New Products

The cement is applied with an ordinary paint brush. The cemented joint can be handled in one hour and has reached working strength in 48 hours, according to the manufacturer.

Available in pints, quarts or gallons, the new material permits solvent welding of any approved piping of polyvinyl chloride. TUBE TURNS PLASTICS, INC., 2929 MAGAZINE ST., LOUISVILLE, KY.

Insulation, Like Blacktop, Rolls on Hot, Sets Fast

Fill-type rigid insulation composed of thermoplastic-bonded perlite is offered for roof construction under the name All Weather Crete.

Requiring no water or mixing, AWC is heated in its shipping drum, dumped, and applied by spreading, rolling or tamping to the desired thickness, density and contour. It requires no drying period, according to the

(Continued on page 58)

ROLLER MOVES along on wood screeds to spread insulation uniformly.

CANT STRIPS and saddles are shaped before plastic binder hardens.

Big rubber tires of C Tournapull provide traction for full loads in the poor footing.

How J. S. Equipment Company moved 200 pay yds. of ripped shale per hr. in poor traction

Over 220,000 yds. of hard shale on a 45-acre section of Hillcrest Estates subdivision in Vallejo, Calif., had to be ripped to load. But when ripped, the shale became slippery footing.

The job included leveling land for 160 new housing sites, cutting and fine-grading streets and driveways, filling around buildings and spreading topsoil. Terrain was rolling; 40′ of a hill had to be cut to level in one section.

2 rubber-tired C Tournapulls and 3 D Tournapulls handled 100% of heavy earthmoving . . . ahead of schedule.

Other equipment on the job included 3 crawler dozers, a crawler pusher, a ripper, 2 sheepsfoot rollers, 2 motor graders (one of them an Adams 610).

"C's" average 200 pay yds.

Despite tough going, the "C's" averaged 20 trips per 50-min. hour . . . carried 10 pay yds. each trip over the 800′ cycle. Production . . . 200 pay yds. per hr. per machine.

"C's" were push-loaded by a D8 over a 100′ loading distance in 39 seconds. Total cycle time: 2 min., 25 sec.

Superintendent Al Bannon reports the 2 'C's" produced 4,000 yds. in 9 hrs. working on a downhill haul.

"D's" move 5 yds. per trip on utility jobs

3 D Tournapulls did clean-up work. They handled light cuts in grading streets, cleaned up and filled around houses, did the fine grading and spread topsoil. On filling and grading an area where houses would be built, the "D's" hauled 5 pay yds. per trip on one-way hauls up to 1200′ one way. "D's" were used for production work when not needed on clean-up and finishing other work assignments.

Maintenance is easy

Bannon rates mechanical efficiency of Tournapulls at better than 90% and says they are much easier to maintain than other equipment.

"I like the Tournapulls because you can work them in all kinds of weather. The short turn radius helps, too," Superintendent Bannon says.

From Operator Babe Marsh: "They're really a nice operating machine. Easy to steer — very maneuverable."

Next time you have a job that looks like "tough going", call on your LeTourneau-Westinghouse Distributor to show you how rubber-tired Tournapulls can give you more pay yds. per load . . . and more loads per hour. He'll be glad to arrange an on-the-job demonstration. No obligation.

D Tournapulls spread on the run, were used on production hauling after completion of precision grading and clean-up work.

Tournapull—Trademark Reg. U.S. Pat. Off. PDP-913-B-b

LeTourneau-WESTINGHOUSE Company

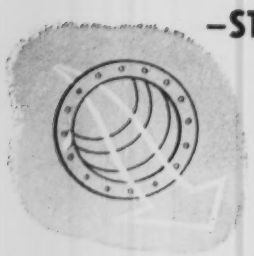
Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

SMS ROTOVALVES

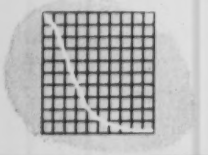
—STILL THE BEST VALVE YOU CAN BUY

Only Rotovalves give you all these features:

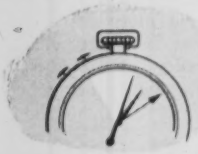


LEAST PRESSURE LOSS
Full line opening means less head loss, lower pumping costs.

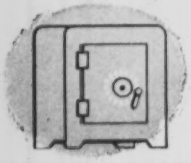
EASIEST TO OPERATE
Hydraulic imbalance and mechanical design mean 1 man can close as fast as required. Less power needed in mechanical or electrical operation.



GREATEST INITIAL SHUT-OFF
Rotovalve 55% closed at 25% stroke, and 92% closed at 50% stroke. In comparison, gate valves only 18% closed at 25% stroke and 43% closed at 50% stroke.



MOST CONTROLLED CLOSING TIME
Closing as quickly as one second or as slow as needed. Fast initial closing limits reversal of flow.



MOST POSITIVE CLOSING
Drop-tight, positive closing. Self-purging, monel-to-monel seating. Pressure-tight bolted head, stuffing box, and machined and lapped seats.

In addition to all these features typical of SMS engineering, Rotovalves have a flexibility that makes them suitable for any type of operation, any method of control, or any sort of location.

For detailed information about SMS Rotovalves, Ball or Butterfly Valves, see our local representative or write to the S. Morgan Smith Company, York, Pennsylvania.

S. MORGAN SMITH

HYDRAULIC TURBINES · PUMPS · GATES & HOISTS · TRASH RAKES · ACCESSORIES

HYDRODYNAMICS

ROTOVALVES · BALL VALVES · BUTTERFLY VALVES · FREE-DISCHARGE VALVES · CONTROLLABLE-PITCH SHIP PROPELLERS

manufacturer, and it cools and hardens quickly.

Applied in one monolithic layer, the insulating material also forms slopes, saddles and cants. Claimed by its maker to be water and fire-resistant and proof against rot and vermin, AWC is not subject to freezout or washout and it can be applied in freezing weather. The resilience of the plastic binder eliminates the need for expansion joints.

Density of the material as applied varies from 15 to 24 lb per cu ft. Heat transmission factor, K, at 75F mean temperature and 18.0 lb per cu ft density is 0.44 Btu per hr per sq ft per deg F per in. At 23.3 lb per cu ft density K is 0.46 at 75F and 0.42 at 40F. Compressive strength at 100F is 1,440 psf. Silbrico Corp., 5901 W. 66th St., Chicago 38, Ill.

Sheet Metal Expands To Form Built-in Tubes

Strips that look like standard sheet copper, brass or aluminum can be inflated to become tubes in a new product marketed under the name Tube-in-Strip. Immediate wide-scale uses for the new product are expected in refrigeration, air-conditioning, radiant panel heating and various heat-exchange apparatus.

The material is a single piece—not two layers joined by welding, brazing or rolling. No different in appearance from standard rolling mill products, it can be stamped, drawn or otherwise formed before the tube strips are expanded.

Inflation techniques are simple, according to the maker: Air pressure may suffice for thin-wall tubes. Thicker walls may require hydraulic expansion.

Tube sizes and shapes may differ within a single piece. Circular tubes result if the metal is unrestrained during expansion. Inflating the strips between flat or shaped plates or dies produces contoured tubes. Expansion may be confined to one side of the sheet only.

Tube size, before expansion, varies from ⅜ to 1 in. Spacing ranges from ¼ in. or less up to the limit imposed by sheet width—present maximum of 16 in. will increase to 24 in. later. Minimum sheet gages are 0.006-in. for copper and brass, 0.020-in. for aluminum. Tube wall thickness is one-half that of the sheet. The material can be brazed, soldered or welded like ordinary mill products.

The product is shipped uninflated, in coils or cut flat sheets. Revere Copper and Brass, Inc., 230 Park Ave., New York 17, N. Y.

Leaning front wheels balance pull of blade as "660" grader shapes shoulder on new county highway. Machine is held in line for smooth, steady and accurate cut.

"660 in a class by itself"

says county Highway Commissioner

"The Adams 660 has the best grader mechanism in use today," states Edgar Olson, highway commissioner for Jackson County, Wisconsin. "It has all the power and weight needed on any job. It's in a class by itself."

Mr. Olson has year-around opportunity to watch the Adams 660 in action. During the summer, his county uses it on highway construction and road maintenance. It is the highway department's favorite tool for scarifying old oil mats. After scarifying, the "660" uses its wide range of speeds to good advantage in spreading new oil mix. In winter, equipped with an Adams snow plow and wing, the grader clears roads for the comfort and safety of the county's taxpayers.

Leased to contractors

When grader is not busy on Jackson County jobs, the "660" is leased to private contractors. This saves the taxpayers' money by bringing in additional revenue for the Highway Department, cuts idle time.

At work on a bank sloping job for a contractor in Trempeleau County, the "660" built shoulders, cut ditches, and hauled a 6′ x 6′ drag. Operator Victor Christianson commented, "It's a wonderful machine with lots of power for moving any material."

26 mph forward, 13.7 reverse

Adams "660" has 8 forward speeds from 1.3 to 26 mph. Speed can be reduced from 1.3 to .23 mph, in three stages, through optional "creeper" gears. These creeper speeds make it easy to rip hard-packed roads and asphalt, dig out unseen roots and stones without severe shocks. They are important, also for accurate finishing in tight places.

Four reverse speeds ranging to 13.7 mph save time on shuttle grading and mixing, backing to buck snow drifts, etc. *No other grader offers this wide range of operating speeds.*

Foot accelerator makes machine handle like an automobile in traffic. Constant mesh transmission smooths gear changing. Helical gears turn quietly on anti-friction bearings . . . gear life is long.

Double-action hydraulic brakes

When brakes are applied to wheels transmission brake is also automatically applied. This gives greater safety in quick, sure stops, with less strain on machine, less brake wear.

Why not look into the advantages of this modern Adams 660 for your spring requirements now? Your local LeTourneau-Westinghouse Distributor will give you all the facts. It's a good year to place orders early to avoid delays when the dirt season opens. You can use an Adams.

Jackson County's "660" cuts and cleans ditches, levels shoulders, back-fills around culverts, rips up old gravel and asphalt pavement, mixes and spreads road surface materials, cleans snow and ice off highways.

A size ADAMS for every need

Model 330 — 80 hp diesel, 20,500 lbs.

Model 440 — 104 hp diesel, 21,500 lbs.

Model 550 — 123 hp diesel, 23,500 lbs.

Model 660 — 150 hp diesel, 27,730 lbs.

TraveLoader—self-propelled loader which will pick up from windrows and stockpiles and loads trucks fast. Flexible belt-type conveyor, heavy-duty construction throughout.

AG-11-P-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

THIS IS THE CAVITATOR

- *for low cost treatment of domestic sewage and industrial wastes*
- *ideal for small communities . . . subdivisions . . . motels . . . resorts . . . schools . . . industrial plants*

Here are 7 reasons why the Cavitator is better:

1. Purification efficiency is equal to or better than that obtained by means of conventional equipment for the activated sludge process. All Cavitator systems meet State Board of Health requirements.

2. Oxygen transfer efficiency is 44% . . . much higher than most conventional equipment which has efficiencies of 5 to 10%.

3. Only 135 cubic feet of air is required per pound of B.O.D. removed (domestic sewage) as compared to 800 to 1000 cubic feet necessary for other types of equipment.

4. Original cost is low compared to any other type system, but purification is equal to that of the best activated sludge installations. Cavitation equipment is built to stand up under years of demanding service.

5. Aeration periods are shorter . . . approximately four hours for average maximum flow. This means smaller aeration tanks can be used . . . another feature which contributes to lower first costs.

6. No blowers or compressors are required. There are no diffusion tubes nor plates to be installed . . . and maintained. There is nothing to clog. The simple mechanism requires the minimum of maintenance and attention.

7. Detergent foam is disintegrated. Foam forming on the liquid surface is drawn down the draft tube into the highly turbulent and aerated zone of the rotor where it is destroyed.

For detailed information, ask for your copy of the newly published, 12-page booklet, ". . . the CAVITATOR"

YEOMANS

1999-1 N. Ruby Street, Melrose Park, Illinois

manufacturers of: distributors • clarifiers • digesters • mechanical aerators • pneumatic sewage ejectors • centrifugal pumps

Publications

New cranes—Just published is a two-color catalog describing two new 25-ton Lorain Moto-Cranes, Models MC-425 and MC-425W. The MC-425 is 96 in. wide, the alternate Model MC-425W, is 108 in. wide to permit developing greater lifting capacities without the use of outriggers. The publication contains descriptions of several new features including: "Shear Ball" mounting that eliminates all turntable rollers, center pins and centering gudgeons; a crane boom with main chords of square tubular cross section to develop greater strength and lifting capacities at reduced weight; a three position turntable mounting for greater efficiency when used for heavy-duty service; a removable counterweight, and dual remote controls. THEW SHOVEL CO., LORAIN, OHIO.

Trailer catalog—A detailed catalog and a series of bulletins covers the Talbert line of low-bed, tilt, flat deck pole trailers. It describes loading and unloading techniques with the patented removable gooseneck. Listings and model illustrations are included from 10 to 100 tons capacity. TALBERT TRAILERS, INC., 7950 W. 47TH ST., LYONS, ILL.

Hollow-core precast planks—School floor and roof systems of Flexicore precast concrete planks are described and illustrated in this 16-page booklet. Plans, photos, renderings and construction details of several recent jobs fill most of the space. The booklet also shows how the hollow-core structural slabs can double as air ducts and finished ceilings. Some erection procedures are included. FLEXICORE CO., INC., 1932 E. MONUMENT AVE., DAYTON 1, OHIO.

Precast concrete slabs—The "Flexicore Precast Concrete System" is described in a new eight-page booklet. Four pages are devoted to design data and drawings, including structural, electrical, plumbing, heating and finish details, for applications of hollow concrete plank. THE FLEXICORE CO., INC., P.O. BOX 825, DAYTON 1, OHIO.

Crawler tractors—A twelve-page, booklet describes how and where the American Tractor Corp. 30 to 60 hp Terratrac tractors fit into the construction picture. A detailed chart compares operating features of leading makes of 1 cu yd crawler-loaders. AMERICAN TRACTOR CORP., CHURUBUSCO (FT. WAYNE), IND.

A Subsidiary of Westinghouse Air Brake Company

Only the new B Tournapull

can give YOU all these advantages

Greater capacity

Accurately rated capacity by SAE standards of 18 cu. yds., struck, or 24 cu. yds., heaped, makes the "B" an outstanding machine for the big yardage jobs.

10-gear speed selection

Ten speeds, plus clutch-brake for fast shifting, means you can haul at higher speeds, complete more haul cycles per hour. Double-clutching and gear clash are eliminated. Low-gear speeds aid in loading, and make it easier to climb grades.

Faster, easier loading

Welded box-beams and channel construction increase bowl strength to withstand stresses of fast loading. New push-block provides direct-line thrust to cutting edge. New scraper hoist-control gives fast pumping action in loose materials. New deflector plate piles heaping loads. Blade angle, improved weight distribution speed loading.

Longer tire life

"B's" 27.00 x 33, 30-ply tires provide ample safety margins. Rated to carry more than capacity loads, they don't overheat, don't wear as do overloaded tires on most self-propelled scrapers of this size.

Power where it's needed

Tournapull's electrical system puts the power right where it's needed with minimum friction loss. Dependable motors, never affected by weather, are operated by dashboard push-buttons. Action is instantaneous. Maintenance is simple.

Shorter turns

"B" maneuvers in closer quarters than any other big self-propelled scraper, turns around non-stop in a space only 35′ wide. With "feather-touch" power-steer, operator controls this rig with no effort . . . maneuvers easily, safely, at high speed.

Less weather delay

Because of "B's" high tractive ability, you start work earlier . . . stop less often due to bad weather . . . add more productive time at end of season. Big, low-pressure tires give good traction in soft going. Differential automatically transfers power to match traction, minimizes wheel slippage. Electric system works accurately and dependably in heat or cold, rain or snow.

Safe, easy operation

Operator rides comfortably on soft, foam-rubber cushioned seat. Pneumatic tires relieve stress and strain on man and machine. Fingertip electric controls work fast, sure, give less end-of-shift fatigue. Good visibility, low center of gravity, big disc-type brakes make Tournapull exceptionally safe to operate.

Interchangeable equipment

Same B Tournapull prime-mover powers an interchangeable 35-ton rear-dump hauler. You get double value from your investment by keeping your 2-wheel tractor working either with shovel rock or scraper dirt. Changeover, using same wheels, brakes, and electric controls, takes only a few hours.

Prototypes of the "B" were put through rugged tests on our new proving grounds. They were then tested on the job by leading contractors, under rugged field conditions. The result is a fully-proved machine. The new LeTourneau-Westinghouse Company backs the new "B" and every component in it.

Tournapull—Trademark Reg. U.S. Pat. Off. BP-883-G-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

BUILT FOR ROCK-HARD ROAD WORK

The Allis-Chalmers HD-21 Crawler Tractor is a Natural for Tough Jobs

Chiseling roads through rock demands "something extra" in crawler tractor performance and durability, yet it's the kind of job any contractor's tractor may be required to do.

Conditions like this call for an Allis-Chalmers HD-21. Its 204-hp Allis-Chalmers engine is noted for its ability to perform with a minimum loss of efficiency even after thousands of hours of operation. Torque converter drive multiplies torque up to 4½ times . . . develops 41,500 lb drawbar pull at low speeds . . . cushions the entire power train against load shocks.

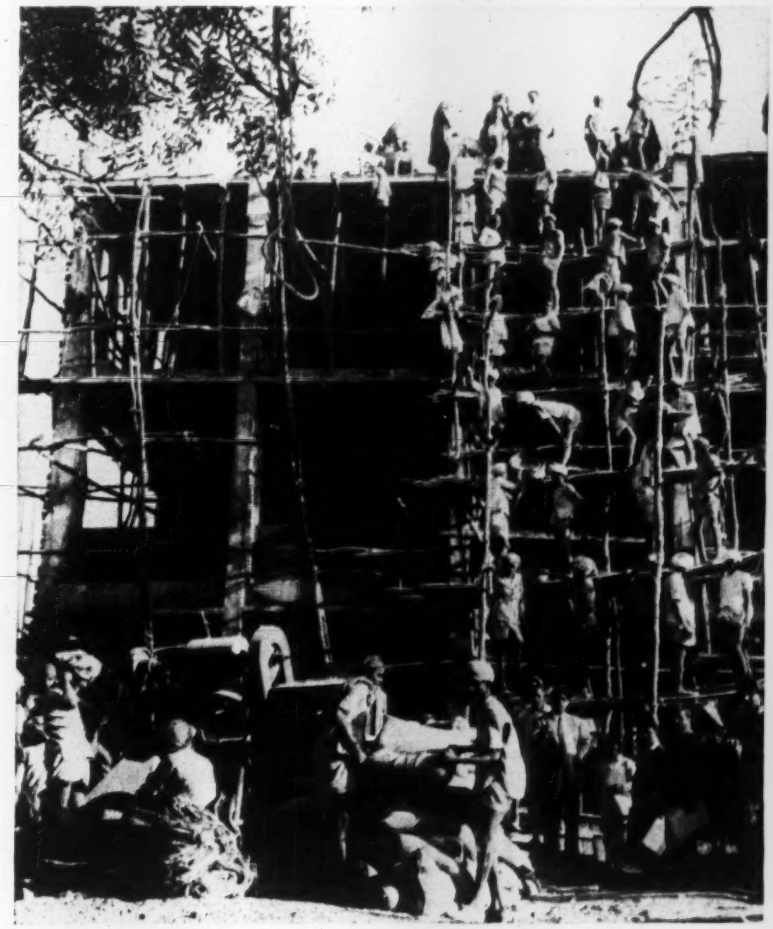
New Tru-Dimension tracks bring a new high in track durability. Thousand-hour lubrication intervals save maintenance time. Positive seals protect idler, support roller and truck wheel bearings from abrasive wear as no other seals can.

Ask your Allis-Chalmers dealer to show you the many other features that make the HD-21 a natural for rock-hard assignments.

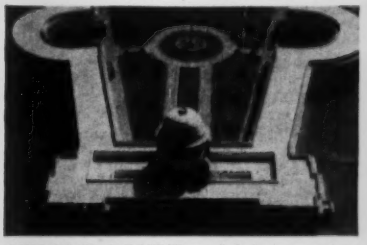
HD-21
204
net engine hp
44,000 lb
torque converter drive

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

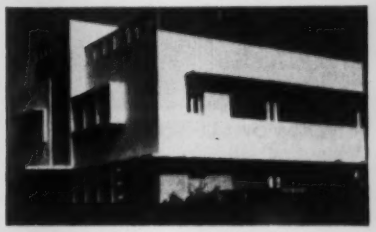
ALLIS-CHALMERS



OCTAGONAL NATIONAL MUSEUM will be three-story reinforced concrete frame faced with thin stone.



SUPREME COURT model shows projecting stone sunshade above third-story windows. Dome is typical.



SHADOWBOX LOOK of businessman's home shows how tropical sun influences Indian architecture.

Manpower makes up for machine scarcity on building construction as . . .

India's Capital City Mushrooms

Traditional domes and cupolas of the Orient will top off modern air-conditioned structures in New Delhi as the burgeoning Indian capital blends old and new in its current building boom.

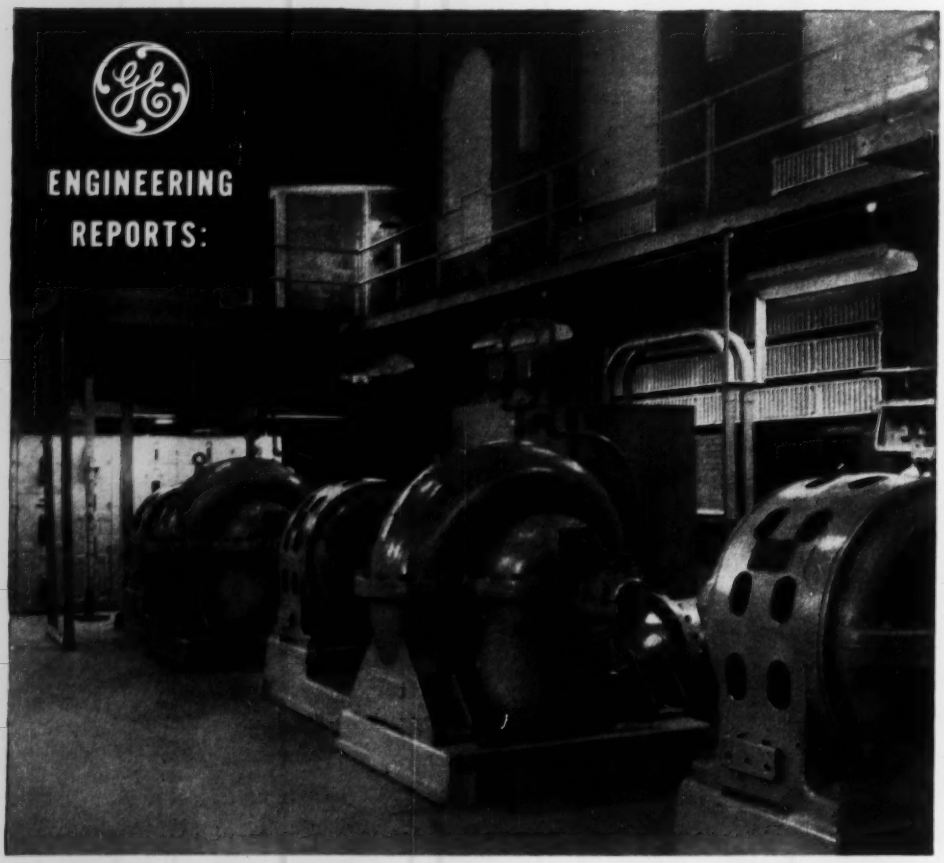
Most ornate of the public edifices now going up is the $1.6-million National Museum, an octagonal reinforced concrete frame building covering 8.8 acres. The glass-domed three-story structure will be faced with red and gray stone. Design includes ornamental column capitals and projecting ledges for statuary.

More modest is the five-story reinforced concrete office block of India's comptroller and auditor general. It will cost $231,000 when completed in Sept., 1956.

Also under construction are a 13-unit $2-million district courts project, an $840,000 secretariat building and a new wing for Broadcasting House (photo left). All are of reinforced concrete frame construction. New headquarters for the General Post Office is in the design stage.

A million-dollar hostel featuring 222 air-conditioned suites, each with its own terrace and temperature control, is being readied for delegates to UNESCO's November session in New Delhi. A conference hall, where the UN group will assemble, is rising at a cost of $777,000. In the diplomatic sector, more than 40 foreign nations are considering building their own embassies in an enclave provided by the Indian government.

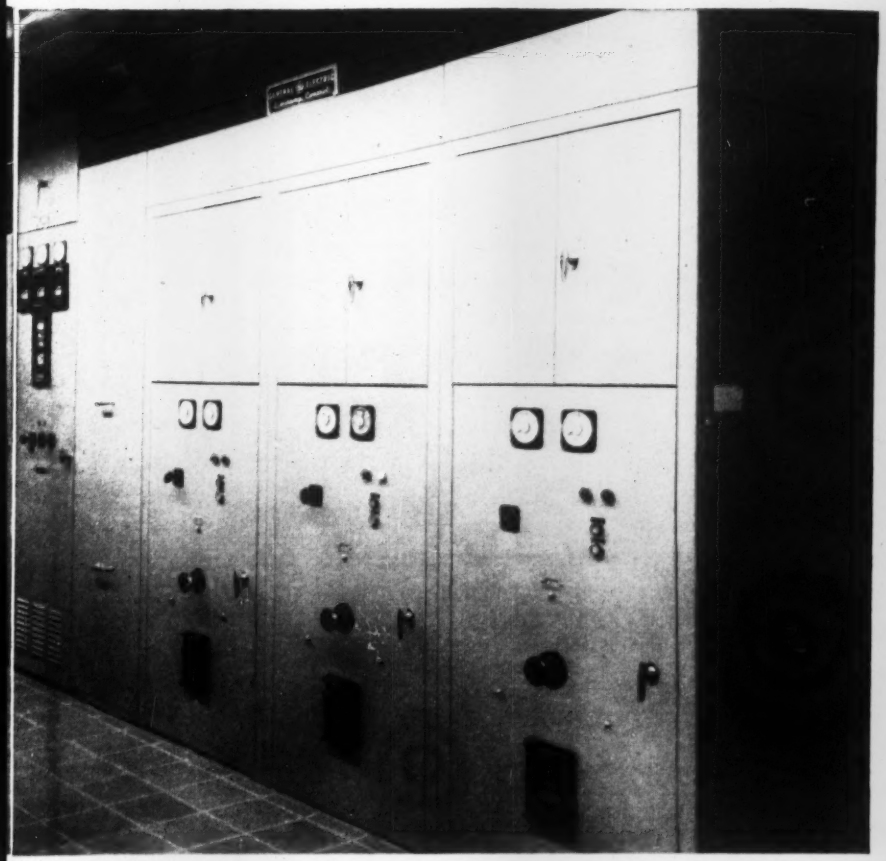
The government's Central Public Works Department continues to build new office space and housing for the city's official population. Reinforced concrete frames and cavity-type curtain walls are used for most office buildings. Dwellings range from one- and two-room apartments to detached bungalows with private gardens. Mass-manufactured two-room huts ments house workers.



30 YEARS OF SERVICE is record of these G-E induction motors from original installation. Modern Cabinetrol* and drawout circuit breaker lineup helps protect, control motors and power circuits.

General Electric helps Indianapolis double

FARSIGHTED PLANNERS of expansion and power system include (l-r) M. H. Miller of Watson-Flagg Engineering Co., electrical contractors; F. H. Stout of Ammerman, Davis and Stout, consulting engineers; D. O. Bender, plant superintendent; and L. C. Stang also of the consulting firm, shown discussing system with E. S. Bush, G-E sales engineer (standing).



HIGHLY RELIABLE protection, control of high-voltage circuits and motors in blower building is provided by General Electric metal-clad switchgear and Limitamp† starters.

sewage treatment capacity

Working with customer, consultants, and contractors, G.E. helped plan power system to meet loads expected by 1976

To assure first-class sewage disposal for its growing population and industries, Indianapolis began a $12 million expansion of its 32-year-old treatment plant in 1951. Today, capacity has been raised from 50 to 120 MGD and facilities have been expanded to provide full secondary treatment. **ENGINEERING ASSISTANCE** was made available by General Electric to the city, its consultants, contractors, and machinery manufacturers from the earliest phases of planning through equipment start-up. G-E engineers, specially skilled in this type of application, helped prepare specifications and designs that will assure the ability of the new power system to handle loads anticipated for the next 25 years.

This same G-E service and equipment can be put to work for you on your next project. Contact your G-E Apparatus Sales Representative. Also ask him about using the film CLEAN WATERS to help you gain public support for sewage projects. General Electric Co., Schenectady, N. Y.

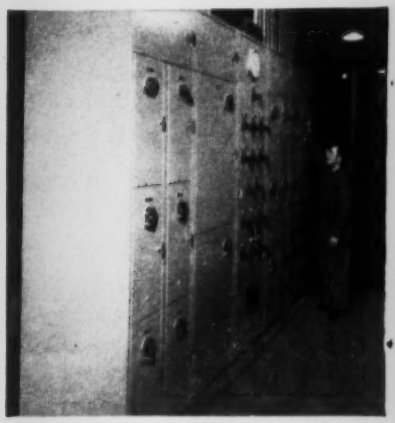
*Reg. Trade-mark General Electric Co.
†Trade-mark General Electric Co.

664-39

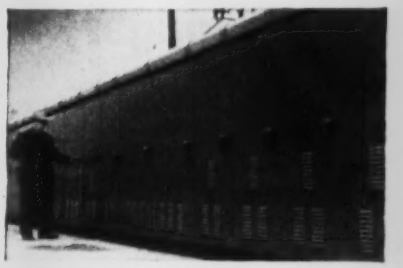
Engineered Electrical Systems for Sewage Plants

GENERAL ELECTRIC

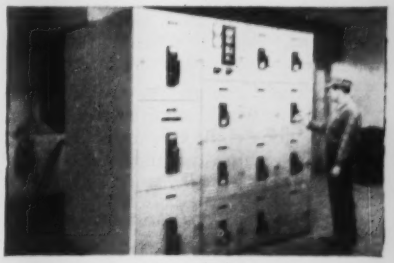
"BUILDING BLOCKS" of power, G-E load-center unit substations can be easily added to serve new loads. Packaged units facilitate handling, installation, operation.



CUSTOM ENGINEERED of standard components, Cabinetrol panel allows centralized control of settling tank motors. Units offer space and access for easy wiring.



HIGH SAFETY, reliability of G-E metal-clad switchgear at service entrance helps assure vital power continuity. Magne-blast breakers require little maintenance.



OPERATOR SAFETY is only one feature of G-E drawout circuit breakers. Applied with ample interrupting capacity for near-future loads, they assure high reliability.

OWNER AND OPERATOR AGREE:

Allis-Chalmers HD-16C torque converter tractor works longer, works faster, produces more

Dozing and pulling a scraper in rock-like shale, the HD-16C owned by Murray Construction Co., Waverly, Ohio, is relocating route 73, northwest of Peebles. On one stretch of road, fill being hauled 1200 ft by the 150-hp crawler and a 15-yd scraper will raise highway grade where it crosses a valley.

More Yardage per Dollar

Co-owner Robert Murray has this to say about the new HD-16. "The tractor is a speedy worker and the torque converter is one of the reasons. We also find we haul more yardage for each dollar spent. And the time saved in not greasing track rollers daily should increase our profits."

Operator Kenneth Austin added this: "Our former tractor would stall loading rock like this, but the '16' goes right through. The torque converter saves clutching and makes it a lot easier for me. At the end of a day's work I'm not nearly as tired.

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"I get more production because I put in an extra half hour a day hauling and dozing instead of greasing track rollers. I can haul and dump three 15-yd loads in that time and that amounts to 225 yd of extra pay load every week."

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An HD-16 gives you more power for bigger jobs . . . plus more effective use of power, with a brand new Allis-Chalmers diesel engine and your choice of two great drives — the job-proved torque converter or the easy-shift standard transmission. But that's not all — you get many more advanced basic design features such as all-steel, box-A main frame and one-piece steering clutch and final drive case . . . unit construction . . . and timesaving, simplified lubrication and service designed with better maintenance in mind.

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From his desk on New York's University Heights, Thorndike Saville, engineering dean—and long a professional force—this year will be . . .

The Man Behind Engineering's Self-Analysis

"I want broad and thoughtful people."

For Thorndike Saville, New York University's dean of engineering, this could be the biggest year in a very busy professional career.

Already distinguished among educators—past-president of the American Society for Engineering Education—Dean Saville at the start of 1956 held the top office in both Engineers Joint Council and the Engineers' Council for Professional Development.

The EJC term ran out in January—a two-year term that had seen the agency grow to nine constituent societies, two associate societies and one affiliate—carrying a total membership of just over 200,000.

The ECPD term runs to next October, and it is as president of this group that Thorndike Saville can distinguish himself further before the entire engineering profession.

ECPD, at its Toronto meeting last October resolved to sponsor a survey of the engineering profession, particularly as it concerns the practicing engineer. Thorndike Saville says he was "shoved into the ECPD presidency" to get this study started.

This will not be a re-examination of engineering education, where Dean Saville points out there have been "surveys after surveys." This will be a survey of all aspects of the engineering profession, an attempt to chart the profession's course for the future.

His immediate job, as Dean Saville sees it, is to gain acceptance for the survey and enough financial support to get it moving before his ECPD presidency ends next October. He feels confident that a survey once started as he envisions it would keep rolling of its own momentum until done.

The idea as developed so far is to investigate:

- The nature and responsibilities of the engineering profession—past, present and future.
- Professional services by engineers—consulting, industry, government, teaching.
- Non-technical services by engineers—management, public service, business.
- Sub-professional engineering services.
- Utilization of and future need for engineers, scientists and technicians.

Also to be tackled: education, registration, unionization, ethics and the organization of the profession to meet its public responsibilities and professional opportunities.

Dean Saville points out that such a survey would be far beyond anything the engineering profession has ever undertaken. He likens it to an exhaustive self-analysis done by the legal profession lately, investigations that came up with "The American Lawyer" and several supporting volumes—a complete study of the legal profession.

But he emphasizes that the survey

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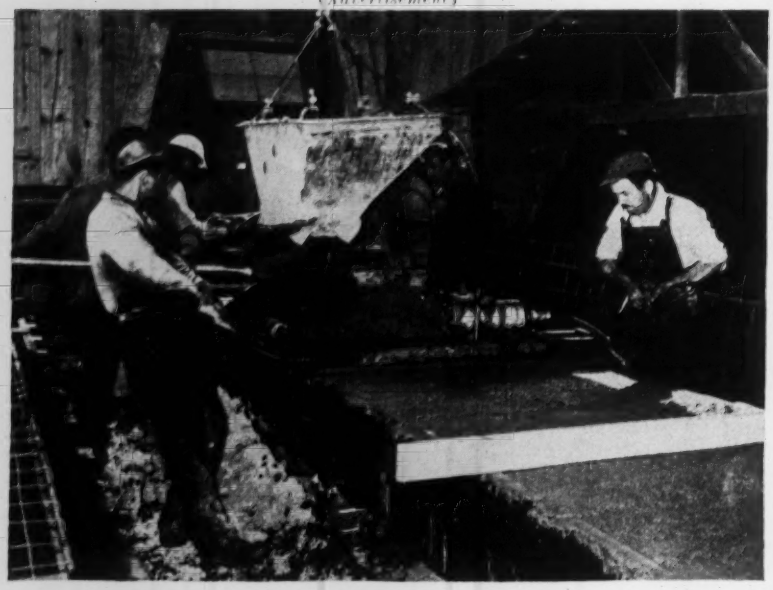

WORKMEN ARE SHOWN vibrating concrete in thin-shell precast roof panels using Viber Model PX pneumatic vibrator mounted on screed.

Contractor Casts 2-Inch Reinforced Roof Panels with Special Screed Using Viber Standard External Vibrator

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P. Grassi-American Terrazzo Co., San Francisco, developed a screed on which a Viber standard Model PX pneumatic high speed vibrator was mounted. Thus concrete was screeded and vibrated in one operation.

Precast panels were 24 ft. long by 4 ft. wide with webs 2 in. thick. In addition to being thin in section, webs were reinforced with welded wire fabric making these areas virtually inaccessible to internal vibration. This made external vibration necessary.

Following proper curing, panels were hoisted by crane and placed on girders also precast by the contractor. Dimensional accuracy of precast panels was good, facilitating placement which was done at the rate of 10 panels in less than one hour. Panels were then welded to inserts in girders to make structure solid.

Viber's Model PX concrete vibrator selected by the P. Grassi-American Terrazzo Co. is used widely in pipe yards and tunnel lining operations wherever reusable steel forms are set up for use on a production basis.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 7-A, 726 South Flower Street, Burbank, Calif.

PRECAST ROOF PANELS shown welded in place were set on girders by truck-crane. Channel side is 8 inches deep and has shelf to retain grout seal.

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is as yet far from being organized. First, ECPD had to convince itself that it was the proper group to organize such a survey. Then in January, EJC lent its support to formation of a joint task-force to implement the idea. And now as ECPD's president, Thorndike Saville is not about to be pushed into any fast but false start on what he sees as perhaps a three-year, million-dollar undertaking.

"I want broad and thoughtful people on an initial committee to get up something to be sold to a really top-notch survey committee. This is something to be undertaken gradually," says the dean.

He indicates that the actual work of the final survey might be undertaken by people outside the profession and cites the Paley Report (President's Committee on Materials Policy) as an example of what he means. And he repeats that his hope will be to have a survey proposal developed and accepted by the societies within ECPD and EJC before relinquishing his leadership of ECPD.

It is not illogical that ECPD chose Thorndike Saville to launch its ambitious analysis of the engineering profession. He has the background of professional experience; he now holds a top administrative job; and he is a forceful personality.

Dean of engineering at NYU for 20 years, his professional experience has been largely in education—before NYU it was the University of North Carolina at Chapel Hill. But he likes to point out that in recent years there has hardly been a time when he has not had "two or three substantial consulting projects going on." Currently he lists his work for the Long Island State Park Commission and his "seven or eight years as engineering member of the New York State Public Health Council." And he stresses that the engagements he has had over the years have been largely on retainer basis for truly consulting work, not production of designs and plans.

In 1950 and 1951 he headed the panel of consultants which reported that New York City should use the Hudson River as a water supply source, a recommendation that has been shelved.

In 1945-48 he was a director of the American Society of Civil Engeneers.

As an administrator, Saville heads up a college with a $2 million-a-year academic budget and a $3 million annual budget in research. These dollar figures are about the best measure of

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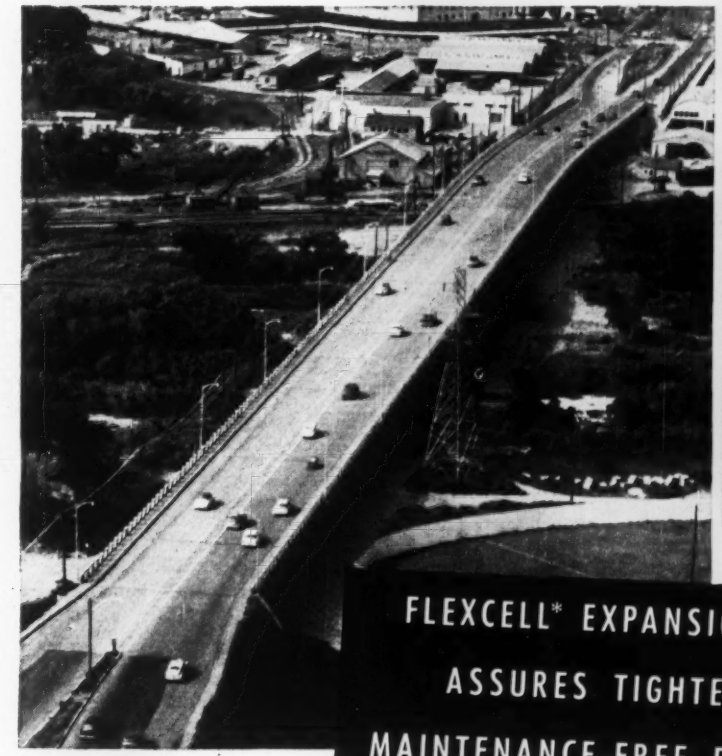

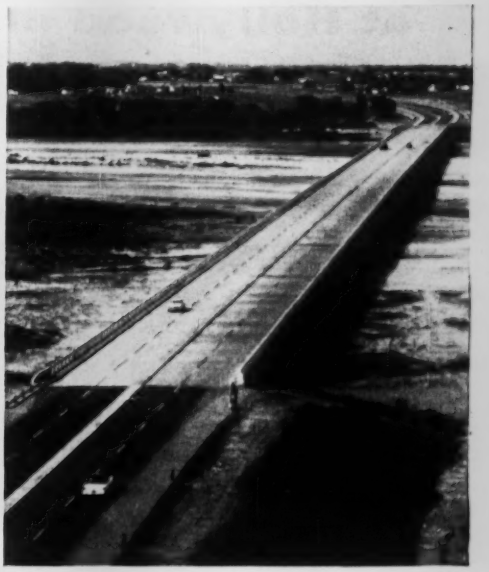

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NYU's size in engineering for it is difficult to compare the full-time-part-time, night-session-day-session student body and faculty of the big metropolitan institution with a more usual educational organization. Roughly, says Dean Saville, the 3,200 assorted engineering students at NYU are equivalent to 2,000 full-time students.

At any rate, it is a large organization he administers, and his associates say he has administered it well. They point out that through his years of service, the college of engineering has gained greatly in its relative position among the other, numerically larger colleges on New York University's six campuses.

They also point out that despite his broad responsibilities and the fact that he no longer teaches, he steadfastly holds to his academic title of professor of hydraulic and sanitary engineering. In fact, he refers to himself as a "water engineer."

Back in the Twenties, while on the faculty at Chapel Hill, he did much work on water resources and beach erosion for the state's Department of Conservation and Development. His love for shore protection came with him to New York, and he has, since its beginning, been one of three civilian members of the Engineers Corps' Beach Erosion Board, representing the Long Island State Park Commission.

In any and all of his professional activities, the personality of Thorndike Saville may be said to protrude sharply. It is a personality that long ago won him the nickname "Thorny" among some of his confreres.

He smilingly attributes to himself "a nasty and suspicious nature". Ambitious, outspoken and articulate to the point of being dramatic, Thorndike Saville is a short man but every inch a dean.

He has some of the accent generally attributed to a Harvard man. He is Harvard, '14; with B.S. and C.E. degrees from Dartmouth, and M.S. degrees from both Harvard and MIT.

He acts and speaks like a very popular Bostonian, like his forebears might have come over on the Mayflower. He is; and they did. His civil engineer father, now 90 years of age, is Caleb Saville, retired chief engineer and manager of the Metropolitan District Water Bureau of Hartford, Conn.

Along with Thorndike Saville, Jr., another budding beach erosion specialist, the 63-year-old dean and his 90-year-old father form a unique three generations of civil engineers—two of them are life members of ASCE.

At 63, Thorndike Saville is faced with enforced retirement from his

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Versatile Pipe Line Licks Rugged Terrain

Tough going calls for easy-to-install Dresser-Coupled steel lines

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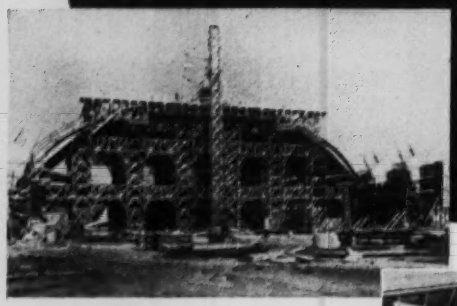

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university post two years hence. By that time, too, he is likely to have ended his non-paying Beach Erosion Board Membership. It is quite obvious that he has hopes of remaining active in what he refers to as his "Professional Work"—his consulting work— and of becoming more active in it, if possible.

A consulting project of unusual nature he completed during February, had him traveling the length of California, talking to all its agencies having any interest in water. Within the next few weeks he will report to his old friend Dean M. P. O'Brien of the University of California as to whether or not he thinks that institution should establish some sort of an advanced institute for water resource study and research. Dean Saville was well qualified both as educator and "water engineer" to take on the consulting assignment.

He enjoyed the chance to be cut off from all his other interests for a month. It remains to be seen whether the West Coast assignment will have any bearing at all on his activities after retirement from NYU.

But back at his desk on University Heights, Thorndike Saville has chores aside from planning for retirement. Working at his full schedule of college administration and weekend routine of dictation, he is also deep in professional affairs. At his peak of a full and strenuous career of organizational work, he heads ECPD in the year when its survey of the profession will —or will not—be launched. For Dean Saville, 1956 will be a big year.

Obituaries

Nathaniel B. Ellery, 83, California's first state engineer, died Feb. 27. Appointed to the newly-established post in 1907, he had been highway commissioner for four years prior to his appointment. During much of his later career he was in private engineering practice and did consulting work up to the time of his death.

Henry D. Alexander, 88, retired New York State civil engineer, died Mar. 2. A graduate of Cornell University, Alexander was employed by the state for 40 years before his retirement.

Robert B. Russel, 33, died Mar. 5, at Philadelphia. A graduate of Drexel Institute of Technology, Russel was office engineer of the assistant chief engineer for structures with the Pennsylvania Railroad.

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Blasting trenches in hard granite formations to install a pipeline in Southern California called for engineering skill, operating-know-how, and a knowledge of explosives.

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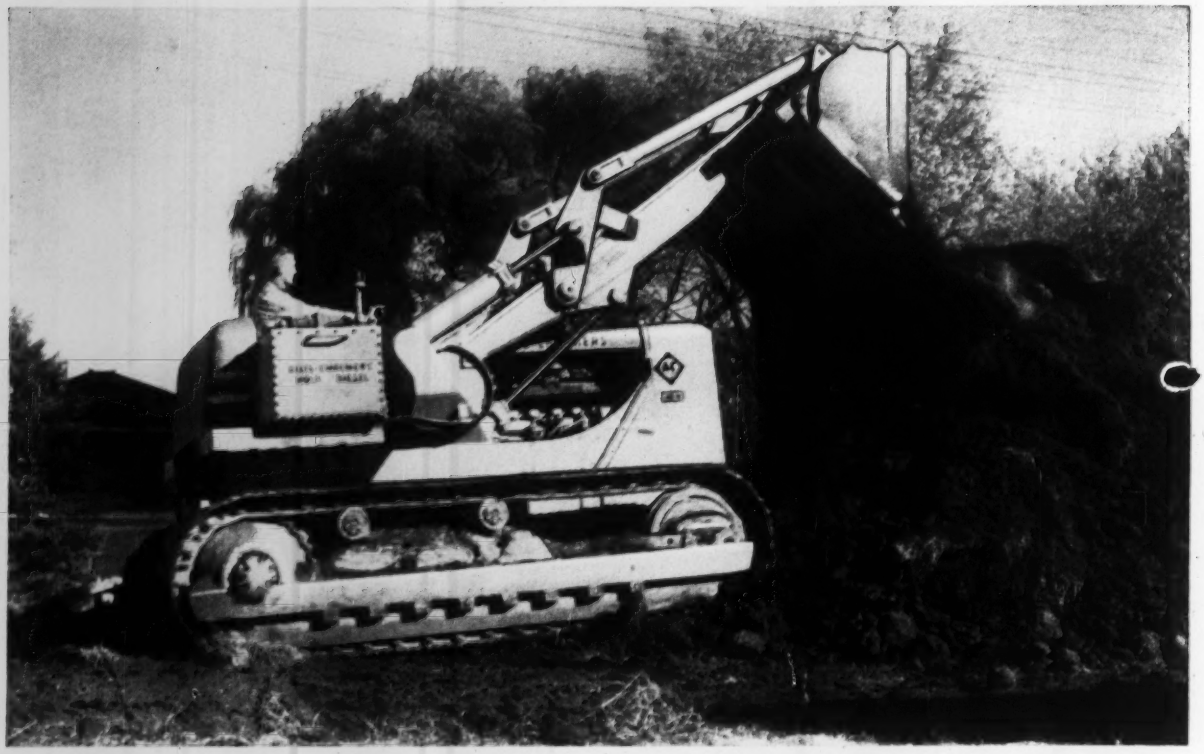

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It handles just like a kitten"

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Me., Brunswick**—CRASH FACILITY and UTILITIES—BA 4/17—Dist. P. Wks. Office, IND, 495 Summer St., Boston 10, Mass., crash facility and utilities, Naval Air Station, NOY 55888, Spec. 47498. Plans deposit $10.

BUILDINGS—BA

Mass., Taunton—HOSPITAL—BA 3/28—Morton Hospital, 88 Washington St., hospital addns., alterations, Grove and Washington Sts. $400,000. Plans deposit $50, refundable. James H. Ritchie & Assoc., 135 Clarendon St., Boston, archts. CD 1/24.

Me., Lewiston—DORMITORY—BA 3/29—Bates College, Dr. Charles H. Phillips, pres., Lewiston, women's dormitory. $460,000. Alonzo J. Harriman, Inc., 292 Court St., Auburn, archt. CD 11/30.

Mass., Boston—ARMORY—BA 3/29—State, Armory Comn., 905 Commonwealth Ave., Boston, armory, Victory Rd. $750,000. William Drummey, 80 Boylston St., Boston, archt. CD 10/28.

Mass., Pittsfield—CLUB—BA 3/29—Pittsfield Girls' Club, 165 East St., club, First and East Sts. $400,000. John H. Fisher, 29 Wendell Ave., archt. CD 9/15.

Mass., Fall River—SCHOOL—BA 4/4—City, School Dpt., c/o Mayor, City Hall, elementary school, North Side London St. $450,000. Plans deposit $50, refundable. Edward M. Corbett, 49 Purchase St., archt. Bids 2/15, rejected. CD 2/21, under LB.

Mass., Billerica—SCHOOL—BA 4/6—Town, School Bldg. Comn., c/o Supt. Schools, elementary school, Lexington Rd. $652,000. Plans deposit $100, refundable. Donaldson Ray McMullin, 216 Conant Rd., Weston, archt. CD 12/13/54.

HEAVY CONSTRUCTION—LB & CA

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Warner Bros., Inc., Sunderland, Mass. CA $587,694, est. $649,177. hy. and bridge constr., Rte. 116, F 308 (5), Sunderland. CD 1/30, under LB.

R. Zoppo Co., Inc., 842 Providence Hy., Norwood, Mass. LB $498,000, est. $475,000. Contr. No. 1, Proj. 209 sewage treatment plant, SOUTHBRIDGE, MASS. State, Dpt. P. Health, State House, Boston, Mass. Bids Mar. 5. CD 2/21.

BUILDINGS—LB & CA

H. P. Cummings Constr. Co., Greenwood Ave., Winthrop, Me. LB Approx. $500,000. HIGH SCHOOL, EAST MILLINOCKET, ME. Town School Dpt., East Millinocket, Me. Bids Mar. 1. CD 2/23.

▲ **Herbert F. Rines**, 201 Lupine Rd., Andover, Mass. Owner Builds. $1,350,000. 40/50 HOUSING DEVELOPMENT, off Shawsheen Rd., ANDOVER, MASS. Claude H. Miquelle, 57 Newcomb, Rd., Melrose, Mass., archt.

Franchi Constr. Co., 815 Washington St., Newtonville, Mass. CA $954,400, est. $900,000. Oliver Ames High SCHOOL, Columbus Ave. and Sheridan St., NORTH EASTON, MASS. Town of Easton, Secondary School Bldg. Comn., High School, North Easton, Mass. CD 2/15, under LB.

▲ **Wexler Constr. Co.**, 118 Needham St., Newton Highlands, Mass. LB $1,425,000, est. $1,500,000. HIGH SCHOOL, Pond St., SHARON, MASS. Town High School Bldg. Comn., c/o Supt. Schools, S. Main St., Sharon, Mass. Bids Mar. 8. CD 2/17.

▲ **Owner**, c/o Nordblom Co., 50 Congress St., Boston, Mass. Owner Builds. Est. $1,600,000. SHOPPING CENTER, Rte. 38, TEWKSBURY, MASS. Eugene Weisberg, 219 Central St., Lowell, Mass., archt.

▲ **A. F. Peaslee, Inc.**, 15 Lewis St., Hartford, Conn., CA, $1,151,776, est. $1,500,000; Contr. E 56-253, Southwest Elementary SCHOOL, Atwood's Corner, HARTFORD, CONN. City, 550 Main St., Hartford, Conn. Bids Feb. 28. CD 3/1, under LB.

▲ **Ridgefield Manor Estates**, c/o Brown, Harris & Stevens, Inc., 14 E. 47 St., New York 17, N. Y., Owner Builds, $2,000,000. 60 HOUSES on 67-acre tract on Route 35, RIDGEFIELD, CONN.

▲ **Flower Estates Homes**, c/o Ryder, Struppmann & Newmann, archts., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds, $2,400,000. 120 HOUSES on 30-acre tract, Clinton Ave., WESTPORT, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Pa., Phila.—POWER DISTRIBUTION SYSTEM—BA 3/26—City, Dpt. Procurement, City Hall Annex, Bid 6565, exten. power distr. sys. for hotel area, Contr. A-291-SW, Phila. International Airport. CD 1/13/50.

N. J., Bayonne—PLAYGROUND—BA 3/27—The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Juliette Street Playground, Proposal No. 770.

N. J., Newark—HANGAR—BA 3/27—The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., Installing surcharge fill for Hangar No. 14, Newark Airport, Contract NA-380.001. Plans deposit $30. CD 6/6/49.

N. Y., Idlewild—PRIMARY SWITCHGEAR—BA 4/3—At office Director of Purchase & Administrative Service of the Port of New York Auth., 111 Eighth Ave., New York, Zone 11, furnishing, del., two sets primary switchgear for New York International Airport, Proposal No. 773. CD 2/25/53.

N. Y., Idlewild—POWER DISTRIBUTION TRANSFORMERS—BA 4/5—At office Director of Purchase & Administrative Service of the Port of New York Auth., 111 Eighth Ave., New York, Zone 11, furnishing, del. 4 power distr. transformers for New York International Airport, Proposal No. 772. CD 2/25/53.

N. J., Newark—TAXIWAY—BA 4/10—The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Taxiway "B" hardstand and aircraft parking areas, Newark Airport, Contract NA 340.002. Plans deposit $30. CD 6/6/49.

BUILDINGS—BA

▲ **N. Y., New York**—HOUSING—BA 3/27—New York City Housing Auth., 299 Broadway, Zone 7, (1) foundations and appurtenances (2) general constr. (3) foundations and general constr. (4) heating and ventilating (5) electrical work and (6) plumbing for Frederick Douglass Houses, Proj. No. NYS-64-1, area bounded by W. 100 St. and Amsterdam Ave. $30,000,000. Plans deposit $75; furnish, install elevators. Plans deposit $25. Extended date. CD 3/5.

N. J., Englewood—AUDITORIUM, GYMNASIUM—BA 3/28—St. Cecelia Church, 55 W. Demarest Ave., auditorium-gymnasium. Anthony J. De Pace, 151 W. 46 St., New York 19, N. Y., archt.

Pa., Leechburg—OFFICE—BA 3/28—Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh, 2 story, 60x145 ft., steel, brick, block office. $400,000. Wm. Simboli & Assoc., 1028 Oliver Bldg., Pittsburgh, archts. CD 9/28.

▲ **Pa., Phila.**—BOILER HOUSE, etc.—BA 3/28—General State Auth., 18 and Herr Sts., Harrisburg, boiler house, laundry, warehouse, Phila. Tuberculosis Sanatorium. $1,600,000. Plans deposit $10 each. Engineering Consultants, 843 N. 19 St., Phila., engrs. CD 4/16/54.

▲ **N. Y., New Hyde Park**—SCHOOLS—BA 4/10—Union Free School Dist. No. 9, New Hyde Park, elementary school, Denton Ave., $650,000; elementary school, Center St., $492,500. Warren H. Ashley, 967 Farmington Ave., West Hartford, Conn., archt. David R. Malman, 217 53 Ave., Bayside, L. I., struct. engr. Bids 1/27 cancelled. CD 12/27.

† **N. J., Port Newark**—BUILDINGS, etc.—BA 4/17—The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., Buildings Nos. 178, 179, 180, 181 and 182 and wharf, Contract PN-300-004. Plans deposit $100. CD 12/2, under Unclassified.

BUILDINGS—SLC

N. Y., Troy—SCHOOL—St. Anthony of Padua Church, c/o Anthony J. DePace, archt., 151 W. 46 St., New York, Zone 19, soon lets contract school.

HEAVY CONSTRUCTION—LB & CA

Edenwald Contg. Co., 151-45 Sixth Rd., Whitestone, N. Y. LB $142,830. (6 bidders) street and yard imprvs. for Sumner Houses Sect. I, Proj. No. NYS 58-4 located in area bounded generally by Myrtle Ave., Lewis Ave., Broadway, Park Ave. and Sumner Ave., BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Mar. 8, CD 2/20;
John Cascione, 50-13 98 St., Corona 68, N. Y. LB $96,982. (9 bidders) topsoil and planting. (Brooklyn, N. Y.).

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

Middlecreek Constr. Co., Middleburg, Pa. CA $852,627. imprv. 2.68 mi. U.S. Rte. 15, incl. I-beam bridge over White Deer Hollo Creek between Allenwood and White Deer, Greg and White Deer Twps., Union Co. CD 3/2, under LB.

Vanguard Constr. Co., 259 Lexington Ave., New York, N. Y. LB $353,840. sewage treatment plant, MOUNT JOY, PA. Mount Joy Boro Auth., Mount Joy, Pa. Bids Feb. 28. CD 2/24;
R. M. Luff Constr. Co., Willow Grove, Pa. LB $326,917. sewage pumping station, (Mount Joy, Pa.).

† **Hall Constr. Co.**, 46 Birch Ave., Little Silver, N. J. LB $223,778. Sites PH-07, 25, 32, 41, 49 and 58 CL for Phila. Defense Area, generator bldgs., connecting corridors; roads, utilities, at Special AAA Sites in Bucks, Chester, Montgomery and Delaware Co., Pa. and Burlington and Camden Co., N. J., PENNSYLVANIA and NEW JERSEY. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Feb. 8, CD 2/23;
Wm. Linker Co., Inc., 2036 Arch St., Phila., Pa. LB $148,052. Sites PH-15, 67, 75 and 82 CL (Pennsylvania and New Jersey);
Lam Building Corp., 1001 Wood St., Phila., Pa. LB $76,422. Sites PH-91 and 99 (Pennsylvania and New Jersey).

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

Frank Pecora Constr. Co., Inc., 204 E. Preston St., Baltimore 2, Md. LB $171,797. dual 3 span steel beam bridges to carry Baltimore Co. Beltway over Edmondson Ave., Contr. B 635-60-420, Baltimore Co. Bids Mar. 6. CD 2/23.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

Rea Constr. Co., Box 2015, Charlotte, N. C. LB $992,039, surf. 1.455 mi. State Rte. 193, 3 span steel beam bridge over N.W. branch of Anacostia River, Contr. P-734-2-320, Prince George Co. Bids Mar. 6. CD 2/29.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

T. B. Gatch & Sons, Inc., 5928 Belair Rd., Baltimore 6, Md. LB $604,806. surf. 4.016 mi. State Rte. 24 from Bel Air toward Forest Hill, Contr. H 391-2-420, Harford Co. Bids Feb. 28. CD 2/23.

BUILDINGS—LB & CA

R. M. DuVal Constr. Co., Inc., 54 State Hy. 17, Paramus, N. J. LB $357,000. (9 bidders) DIVISION MAINTENANCE BLDG., New York State Thruway Auth., Nyack, NEW YORK. Bureau Contract & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 1.

Holler Brothers, Roosevelt Ave., Tonawanda, N. Y. CA ACADEMY addn., near Cazenovia St., BUFFALO, N. Y. Total est. $800,000. Sisters of Mercy Academy, 625 Abbott Rd., Buffalo, N. Y. Mortimer Murphy, 445 Franklin St., Buffalo, N. Y., archt.;
George H. Sander Co., 1911 Niagara St., Buffalo, N. Y. CA plumbing work (Buffalo, N. Y.);
Radiant Heating & Ventilating Co., 378 Englewood Ave., Kenmore, N. Y. CA heating and ventilating work (Buffalo, N. Y.);
Vollher Bros., 891 Washington St., Buffalo, N. Y. CA electrical work (Buffalo, N. Y.).

Nicholas Coblis & Sons, Geneva, N. Y. LB $351,000. ELEMENTARY SCHOOL, addn., alteration to BUS GARAGE, CLIFTON SPRINGS, N. Y. Central School Dist. No. 1, Clifton Springs, N. Y. Ketcham-Miller-

(Continued on page 77)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

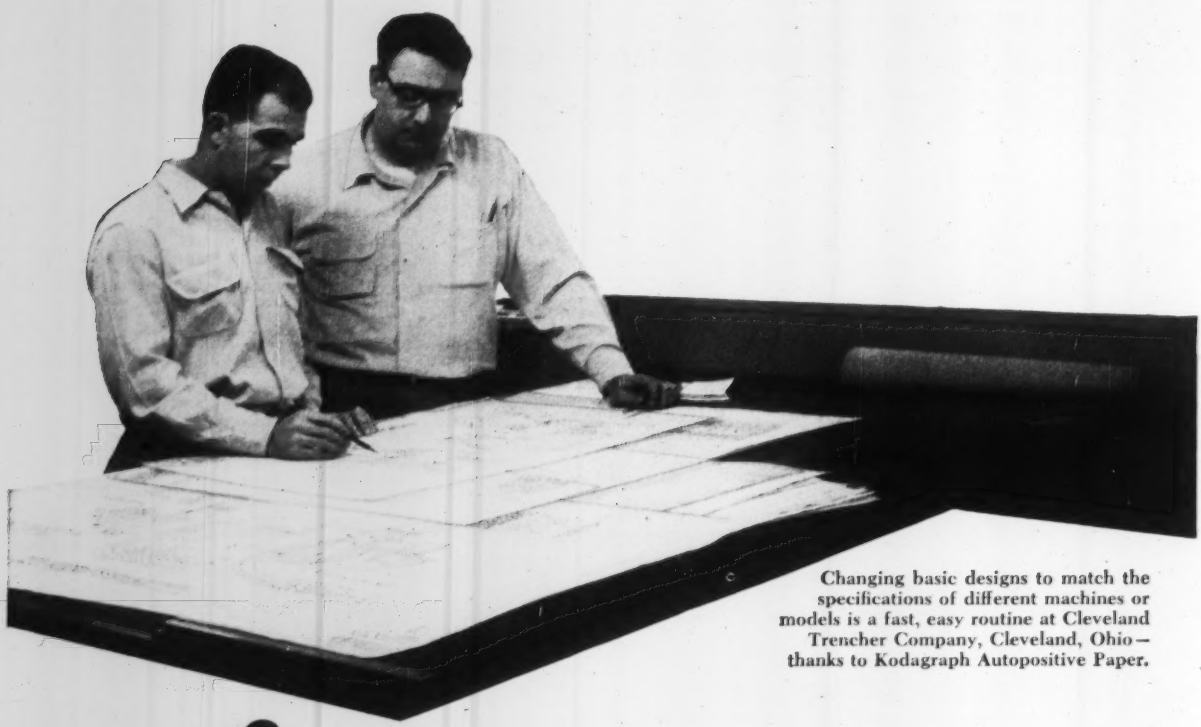
PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.



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Kodak
TRADE MARK

(Continued from page 75)

Arnold, James St., Syracuse, N. Y., archts. Bids Feb. 29.

▲ **Furwood Gardens Homes,** c/o Long Island Homes, 168-12 Hillside Ave., Jamaica 32, N. Y. Owner Builds. $1,275,000. 85 HOUSES on tract at Fifth Ave. east of Larkfield Rd., EAST NORTHPORT, N. Y.

▲ **Stafford at Freeport Homes,** c/o Herman York, archt. 90-04 161 St., Jamaica, N. Y. Owner Builds. $1,350,000. 60 HOUSES on tract at South Grove and Caxman Sts., FREEPORT, N. Y.

▲ **Lasker-Goldman Corp.,** 50 E. 42 St., New York 17, N. Y. LB $7,711,000, (6 bidders) general constr. RECEPTION BLDG., at Manhattan State Hospital, Wards Island, NEW YORK, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y., Bids Mar. 8, CD 2/13;
Afgo Engineering Corp., 475 Adelphi St., Brooklyn 17, N. Y. LB $483,000, (4 bidders) heating work (New York, N. Y.);
Joseph F. Egan, Inc., 3013 Grand Concourse, New York 58, N. Y. LB $648,900, (4 bidders) plumbing work (New York, N. Y.);
Progressive Electric Contg. Corp. & Forest Electric Corp., (joint venture), 39-17 24 St., Long Island City, N. Y. LB $659,800, (7 bidders) electrical work (New York, N. Y.).

▲ **Parkview at Sayville Homes,** c/o Henry A. Klar Realty Co., 220-02 Horace Harding Blvd., Bayside Hills, N. Y. Owner Builds. $2,200,000. 202 HOUSES, on 78 acre tract bounded by Lakeland Ave., Broadway and Montauk Hy., SAYVILLE, N. Y.

▲ **Orchard Park Homes,** c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $2,000,000. 120 HOUSES on tract, at Seaman's Neck Rd., WANTAGH, N. Y.

▲ **George A. Fuller Co.,** 597 Madison Ave., New York, N. Y., CA Est. $2,500,000. 1 story, steel, concrete PLANT to mfg. electrical stairways, 4 mi. southwest of DOVER, N. J. Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.; Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., archts.

▲ **Daniel J. Cronin,** 717 S. Orange Ave., Newark, N. J. LB $1,833,616. general contract, SCHOOL, FAIRLAWN, N. J. Bd. Educ., Supt. Schools, 7-06 Fairlawn Ave., Fairlawn, N. J. Arthur Rigolo, U. S. State Hy. 46 and Grove St., Clifton, N. J., archt. (CORRECTION—location of project). CD 3/8, under LB, N. J., Fairfield.

▲ **Prospect Manor Homes,** c/o Pasford Ltd., 37-01 Broadway, Fairlawn, N. J. Owner Builds. $1,500,000. 72 HOUSES on tract on Prospect St. between Fairlawn and Ackerman Aves., GLEN ROCK, N. J.

▲ **Harrington Park Manor,** c/o Jack Smith, 76 County Rd., Tenafly, N. J. Owner Builds. $1,400,000. 56 HOUSES on 35-acre tract, near Ehret Ave. and Lafayette Rd., HARRINGTON PARK, N. J.

Burt C. Skinner, DuBois, Pa. LB Est. $250,000. 1 story, 130x350 ft. brick, steel mfg. PLANT addn., DU BOIS, PA. Rockwell Mfg. Co., 390 N. Lexington Ave., Pittsburgh, Pa.

▲ **Moyer Brothers,** 2605 Beale Ave., Altoona, Pa. LB $1,457,000. 2 story, bsmnt., brick, block high SCHOOL, MEADVILLE, PA. Meadville Area School Dist., Meadville, Pa. Bids Feb. 28. CD 2/3.

Mount Lebanon Builders, 470 Washington Rd., Mount Lebanon, Pittsburgh, Pa. CA Est. $500,000. 6 story, brick, block, steel OFFICE, MONROEVILLE, PA. Nelson Development Co., Wm. Penn Hy., Monroeville, Pa. Bids Feb. 20. CD 2/16.

▲ **Brusca Bros.,** 5131 Cypress St., Pittsburgh, Pa. LB $1,579,000. 2 story, brick, block North Hills High SCHOOL, Ross Twp., PITTSBURGH, PA. North Hills Joint Schools, West View, Pittsburgh, Pa. Ingham Boyd & Pratt, Empire Bldg., Pittsburgh, Pa., archts. CD 4/29/54.

▲ **The Greenbriar, M. T. Pugatch,** 1023 N. Calvert St., Baltimore 2, Md. Owner Builds. $1,500,000. 9 story, 100x150 ft., rein.-con., brick, steel, APARTMENT, Park Heights Ave. and Shelburne Rd., BALTIMORE, MD. CD 1/30.

Mullan Contg. Corp., 3945 Greenmount Ave., Baltimore 18, Md. LB Base Bid $840,000. Norwood Elementary SCHOOL, Dundalk, TOWSON, MD. Baltimore Co., Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Mar. 6. CD 2/15;
John K. Ruff, Inc., 3010 Ridgewood Ave., Baltimore 15, Md. LB Base Bid $840,750. Norwood Elementary SCHOOL (Towson, Md.).

Blake Constr. Co., 33 E St., S. W., Wash., D. C., LB $895,000. ELEMENTARY SCHOOL, vicinity 6 St. and Riggs Rd. N. E., WASH., D. C. D. C. Govt., Dir. Bldgs & Grounds, 499 Pa. Ave. N. W., Wash., D. C. Bids Mar. 6. CD 2/15.

Mohler Constr. Co., 1223 Connecticut Ave. N. W., Wash., D. C. LB $361,585 (8 bidders) CHURCH, WASH., D. C. St. Paul English Luthern Church, 3600 Everett St. N. W., Wash., D. C. P. H. Frohman, 1107 19 St. N.W., archt.

SOUTH

HEAVY CONSTRUCTION—BA

† **MISSISSIPPI**—BA 3/30—Bureau P. Rds., Dpt. Commerce, First National Bank Bldg., Florence, Ala., **Jefferson Co.**—2 rein.-con. slab bridges on treated timber substructure over S. Fork of Coles Creek and over Bullens Creek and approaches, Natchez Trace Parkway, Proj. 3W7. CD 7/19, under Streets and Roads.

† **Fla., Tampa**—ROAD STRENGTHENING, etc.—BA On Or About 4/6—U. S. Eng., P. O. Box 4970, Jacksonville, Zone 1, road strengthening, widening, Ordnance Area (FY-53), MacDill Air Force Base, ENG-08-123-56-54. CD 8/18.

(Continued on page 80)

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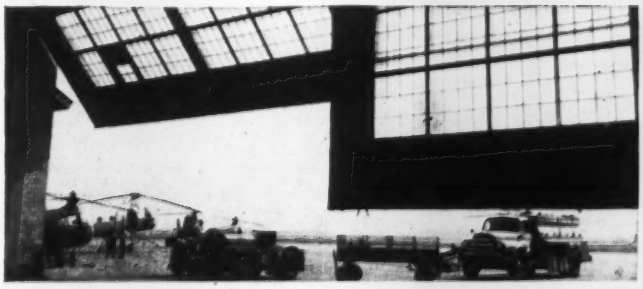

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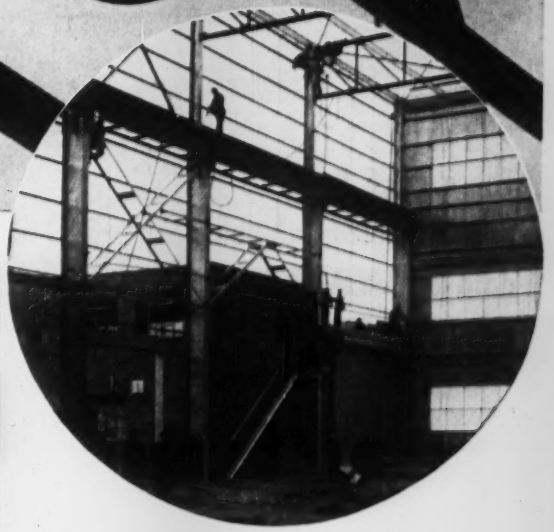

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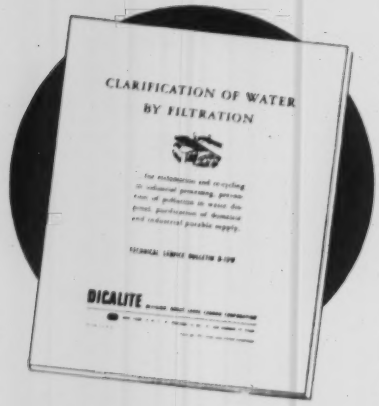

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(Continued from page 77)

Va., Arlington—BA 4/10—Arlington Co., H. G. Bonney, purch. agent., Court House Bldg., Contr. 5, furnish, erect 500,000 gal. elevated steel water storage tank. Plans deposit $10. Alexander Potter Assocs., 50 Church St., New York 7, N. Y., consult. engrs.; adv. ENR 3/15. CD 8/12/54.

▲ **Ala., Mobile**—BA 4/17—City, City Hall, paving 15.5 mi. streets in Toulminville area, $2,000,000. Palme & Baker, Inc., 959 Spring Hill Ave., engr. CD 8/1.

† **S. C., Myrtle Beach**—CONDUIT SYS.—BA About 4/19—U. S. Eng., 31 Customhouse, Charleston, underground conduit sys., Myrtle Beach Air Force Base, ENG-38-081-56-52. CD 9/29.

HEAVY CONSTRUCTION—LB & CA

† **VIRGINIA**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,

Troitino & Brown, Inc., Box 2929, Nashville, N. C. LB $130,165 (3 bidders) Proj. 1D16, constr. brick-faced concrete arch overpass and other work, under Tazewell Hall Ave., Colonial Parkway in Williamsburg, James City Co. Bids Mar. 6. CD 2/9.

† **Owen Constr. Co., Inc.**, 719 Winston St., Greensboro, N. C., CA $360,838, Air Force Facility, ENG-31-075-56-66, WINSTON-SALEM, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Feb. 15. CD 2/6.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

Ballenger Paving Co., Paris, S. C., CA $1,433,956 excav., stab., rock base with bit., c. conc., plain, 2 conc. box culverts, steel roadway grade separation bridges, small drainage structures 4.543 mi. Fed. Aid Proj. F 007-1 (7) and IN-104-1 (1), Jobs 1610-204 1019-201 and 1610-203, Polk and Hillsborough Counties. Bids Dec. 22, awarded Mar. 8. CD 12/29, under LB.

FLORIDA—State Road Dpt., Tallahassee,

Fla.—**Coffee Constr. Co.**, Eastman, Ga., LB $481,115 (6 bidders) 521 ft. concrete, steel overpass over A. C. L. and S. A. L. R.R., with graded approaches, 98 ft. concrete deck slab bridge over Washington St., etc., 0.41 mi. SR 25, U-002-3 (10), Job 2904-205, Columbia Co.;

Fla.—**Soule Constr. Co.**, Box 1550, Pensacola, Fla., LB $139,991 (8 bidders) widen fifteen 21 ft. concrete deck girder spans, removing steel truss, constr. 3 concrete deck girder span bridge Chipola River Bridge at Marianna, Job 5302-114, SR 10, Jackson Co. Bids Mar. 6. CD 2/21.

FLORIDA—State Rd. Dpt., Tallahassee,

Fla.—**Smith Eng. & Constr. Co.**, Drawer 1831, Pensacola, Fla., LB $129,878 (6 bidders) sand asph. hot mix surf. 28.409 mi. SR 4, Job 5808-107, Santa Rosa Co.;

Fla.—**Handley Constr. Co.**, Pahokee, Fla., LB $185,638 (8 bidders) wid'n., reworking rock, base, surf., b. conc. 5.704 mi. SR 80, Job 9311-118, Palm Beach Co.;

Fla.—**Naranja Rock Co., Box 96, Naranja, Fla.**, LB $137,537 (9 bidders) wid'n., reworking rock base, surf. b. conc. 8.482 mi. SR 27, Job 8716-102, Dade Co. Bids Mar. 6. CD 2/21.

Harbert Constr. Co., Box 2611, Montgomery, Ala., LB $943,290. streets, pavements, water service SANTA ROSA ISLAND, FLA. Okaloosa Island Authority, Fort Walton Beach, Fla. Knox Kershaw Co., Fort Walton Beach, engr.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

W. R. Fairchild Constr. Co. Ltd. & J. W. Snowden Constr. Co., Hattiesburg, Miss. LB $2,754,558, welded constr. $2,883,768, riveted constr. (11 bidders) fixed high level bridge and bit. hot mix surf. approaches or b. conc. 2.378 mi., Bayou Boeuf Bridge and approaches (Amelia), LA, U. S. Rte. No. 90, S.P. 5-01-11 and 5-02-31, F.A. Proj. F 155 (6), St. Mary and Assumption Parish. Bids Feb. 29. CD 1/6, under Streets and Roads.

▲† **T. L. James & Co.**, Ruston, La. CA $2,493,836, est. $2,585,879. airfield paving, lighting, Barksdale Air Force Base, ENG-03-050-56-60, SHREVEPORT, LA. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Feb. 23, awarded Feb. 29. CD 3/5. under LB.

BUILDINGS—LB & CA

▲ **Jefferson Constr. Co.**, 3128 Coral Way, Miami, Fla., LB $2,324,687, Norland, Rainbow Park, Tropical, West Palm Springs, Weston Village, Westwood Lake and Richmond Heights Elementary Schools, Boggs Dr. between Harrison St. and Pinkston Dr., MIAMI, FLA. Bd. P. Instruction, School Admin. Bldg., 275 N.W. 2 St., Miami, Fla. Bids Mar. 7. CD 2/15.

▲ **Barksdale & LeBlanc**, Box 1567, Baton Rouge, La. LB $1,615,748, est. $1,500,000. 5 story, basmt., 86,000 sq. ft. rein.-con., masonry State LIBRARY, Boyd and North Third Aves., BATON ROUGE, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Mar. 6. CD 2/1.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **Mich., Selfridge Air Force Base**—SERVICE CLUB—BA 3/28—U. S. Eng., 600 E. Jefferson Ave., Detroit, service club. CD 11/21.

Wis., Milwaukee—MAUSOLEUM—Bids Asked—Wisconsin Memorial Park, W. Capitol Dr. and N. 130 St., mausoleum addn. $500,000. R. A. Messmer & Bros., 231 W. Wisconsin Ave., Milwaukee, Zone 3, archts. CD 10/21.

BUILDINGS—BA

Mich., Royal Oak—SCHOOL—BA 3/28—City, Bd. Educ., 1026 N. Main St., Dondero Senior High School, addn., North Washington, $900,000. Plans deposit $50, O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 3/21/55.

▲ **Mich., Milford**—SCHOOL—BA 4/5—Bd. Educ., Huron Valley Schools, Lawrence J. Branderbury, secy., 640 Hickory St., Senior High School, $1,250,000, Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, archt. CD 4/28.

HEAVY CONSTRUCTION—LB & CA

▲ **Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O. CA $2,145,585, East Branch, Ohio River Interceptor, Sect. No. 2, from McLean to Richmond St., to Front and Elm Sts., CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Mar. 6. CD 2/23.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis,

Ind.—**Bontrager Constr. Co.**, Elkhart, Ind., LB $300,402, est. $358,775, c. conc. 0.81 mi. Benham Ave., Elkhart, U-822 (1), Elkhart Co.;

Ind.—**McMahan Constr. Co.**, Rochester, Ind., LB $796,576, est. $967,862. b. conc. 6.22 mi. F-824 (1), Hamilton Co.;

Ind.—**Traylor Bros., Inc.**, Upper Mt. Vernon Rd., Evansville, Ind., LB $918,646, est. $1,036,237, c. conc. 1.923 mi. S-845 (1), Vanderburg Co. Bids Mar. 6. CD 2/29.

INDIANA—State Hy. Dpt., State House Annex, Indianapolis,

Ind.—**McMahon Constr. Co.**, Rochester, Ind., LB $106,325. est. $127,157. resurf. 4.712 mi. RS 3949, F-15 (14) Crawfordsville, Hendricks; LB $135,533, est. $174,016 resurf. 5.031 mi. RS-3950, F-15 (15) F-7 (8), Crawfordsville, Hendricks and Marion;

Ind.—**De Bolt Concrete Co.**, Richmond, Ind., LB $108,688, est. $133,426. Type "B" 0.371 mi. Greenfield, Wayne;

Ind., **Stone City Constr. Co.**, Bedford, Ind., LB $277,271, est. $287,254. Type "D" 0.775 mi. R 3955, 852 "A", Vincennes, Martin.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Mich.—**Loselle Constr. Co.**, 1555 Goddard St., Wyandotte, Mich. LB $1,762,560, est. $2,000,000. (13 bidders) dual lane c. conc. relocation 4.415 mi. US-16 from 10 Mile Rd. to Grand River Ave., IN 63-29 C11-RO, IN 63-29 C12-UO (IN 04-4 11 Part 2), Wayne Co.; LB $932,802, est. $1,600,000. (14 bidders) dual 24 ft. c. conc. 5.439 mi. US-16 from Ten Mile Rd. to 12 Mile Rd., IN 63-29 C10 RO (IN 04-4 1), Part I, Oakland Co.;

Mich.—**Jutton-Kelley Co.**, 13240 Albert St., Dearborn, Mich. LB $153,918, est. $180,000. storm water pumping station Edsel Ford Expressway, UI D15 of 82-22 C1-UO, etc., Wayne Co.;

Mich.—**Detroit Asphalt Paving Co.**, 432 Lafayette Bldg., Detroit, Mich. LB $444,381, est. $450,000. (14 bidders) b. conc. surf. c. conc. 11.83 mi. patching on US-23 and M-59, M 47-22 C6 RN, M 47-26 C9-R, Livingston Co.;

Mich.—**East Shore Asphalt Paving Co.**, Alpena, Mich. LB $102,553, est. $100,000. (8 bidders) bit. aggregate surf. M-61 from 823 ft. west of east limits of Gladwin to 1,233.52 ft. east of M-30, SS 26-11 C6-R, SS 26-11, etc., Gladwin Co.;

Mich.—**Maclean Constr. Co.**, 731 E. Sheridan Rd., Lansing, Mich. LB $312,577, est. $360,000. (17 bidders). grading 1.79 mi. US-23 from M-81 north to present US-23, IN 73-50 C8-UN (IN 87-2 1), Oakland Co.;

Mich.—**Lake & Howell Constr. Co., Howell, Mich.** LB $388,994, est. $390,000. (14 bidders) b. conc. wearing course 10.8 mi. US-23 from Intersection of M-59 north to north county line, M 47-27 C8-RN, Livingston Co.;

Mich.—**Wright Constr. Co.**, 3800 Wood St., Lansing, Mich. LB $79,627, est. $100,000. (8 bidders) b. conc. 1.021 mi. US-27 and M-78, M 33-13 C4-RN, M 33-9 C21-R, M 19-32 C4-R, Ingham and Clinton Counties. Bids Mar. 7. CD 2/23 and 2/29.

BUILDINGS—LB & CA

▲† **Blount Bros. Constr. Co.**, Bell Bldg., Montgomery, Ala., CA $4,966,000, CHEMICAL PLANT for conversion of highly purified uranium compounds into uranium hexafluoride in Portsmouth area (Subcontractors under Peter Kiewit Sons Co., P. O. Box 268, Portsmouth, O.) for Atomic Energy Comn., 1901 Constitution Ave., N. W., Wash. 25, D. C., PIKETON and WAKEFIELD, O. CD 8/13/52, under CA.

▲ **International Steel Co.**, 1321 Edgar St., Evansville, Ind., CA, Total est. $44,000,000. structural steel contract, 1,200,000 sq. ft. STEERING GEAR PLANT, east side of INDIANAPOLIS, IND. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. CD 2/16; **Cunningham-Limp Co.**, 3087 W. Grand Blvd., Detroit, Mich., CA, general contract (Indianapolis, Ind.).

▲ **Timbrick Development Co.** 1050 Cherry St., Hammond, Ind., Own Forces $6,000,000. 300 HOMES, MUNSTER, IND.

▲ **E. H. Marhoefer Jr., Co.**, 505 N. La Salle St., Chicago, Ill. CA, $2,393,645 and $2,412,668, general contr. two new units, MENS RESIDENCE HALLS, WEST LAFAYETTE, IND. Bd. Trustees Purdue University West Lafayette, Ind. Awarded Feb. 23. CD 2/13.

▲† **Corbetta Constr. Co.**, 208 S. La Salle St., Chicago 4, Ill. CA $3,046,000. BARRACKS, SUBSISTENCE BLDGS., water and sewer lines, Great Lakes Naval Training Station, GREAT LAKES, ILL. Ninth Naval Dist., Great Lakes Naval Training Station, Great Lakes, Ill. Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago 3, Ill., archts. Awarded Mar. 5. CD 6/28/51.

W. H. Sloan, S. Seymour St., Mundelein, Ill. Own Forces. $680,000. 40 HOMES, MUNDELEIN, ILL.

McCabe Development Co., 230 N. Western St., Park Ridge, Ill., Own Forces. $350,000. 12 HOMES, PARK

(Continued on page 82)

Firestone NYLON TIRES

MOVING 60,000 CUBIC YARDS A DAY TO HELP TAME THE MIGHTY MISSOURI

THE earthmoving unit shown above is typical of the many Firestone equipped units that are running round the clock to speed construction of Oahe Dam on the Missouri River. When completed, Oahe Dam will be the largest rolled filled earth dam in the world.

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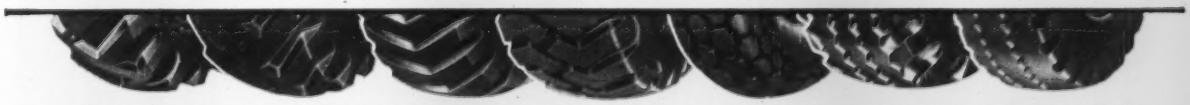

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(Continued from page 80)

RIDGE, ILL. B. J. Bruns, 5241 N. Central St., Chicago, Ill., archt.

Shepherd Constr. Co., 1015 Plainfield Rd., Joliet, Ill. LB $571,000. 1 and 2 story, brick, stone HIGH SCHOOL, PLAINFIELD, ILL. School Dist. 202, Plainfield, Ill. Berger, Kelley & Assocs., 44 Main St., Champaign, Ill., archts.

▲ **F. J. Skidmore & Son, Inc.**, 52 Capital Ave. S.W., Battle Creek, Mich. CA $1,197,393. two CUSTODIAL BLDGS., Coldwater State Home & Training School, COLDWATER, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. CD 2/10, under LB.

Alfred A. Smith, Inc., 721 Saratoga St. East, Ferndale, Mich. LB $815,158. general constr. 281x283 ft. L-shaped OCCUPATIONAL THERAPY and RECREATION UNIT, Northville State Hospital, NORTHVILLE, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., 300 S. Walnut St., Lansing, Mich. Bids Mar. 8. CD 2/21.

WEST OF MISSISSIPPI

BUILDINGS—BA

Colo., Denver—BA 3/29—Bd. Educ., Cherry Creek Dist. No. 5, 3801 S. Boston St., 1 story, steel Cherry Creek Junior High School. $550,000. G. Meredith Musick & Clayton C. Musick, 616 Patterson Bldg., engrs. CD 12/14.

Wyo., Manderson—SCHOOL—BA 3/29—Manderson Hyattville High School Dist., Manderson, 1 story, brick high school and gymnasium. $650,000. Tresler & McCall, 1276 Sheridan Ave., Cody, engrs. CD 5/11.

▲ **Colo., Fort Collins**—DORMITORIES—BA 4/12—Colorado A & M College, Ft. Collins, two A & M men's dormitories, Aylesworth and Ellis Halls, $1,200,000. James M. Hunter, 1126 Spruce St., Boulder, engr. CD 12/2.

▲ **Mont., Boulder**—CLASS ROOM, etc.—BA 4/12—State, Bd. Educ., Helena, 2 story classroom-dormitory bldg. at Montana Training School. $1,500,000. J. G. Link & Co., 111 N. Montana St., Butte, archts. CD 1/4/55.

▲† **N. M., Los Alamos**—HOUSING—BA 4/18—Atomic Energy Comn., Los Alamos, 125 housing units, Group 18 Housing, Phase A, Inv. 291-56-9, $1,700,000-$2,000,000. W. C. Krueger & Assocs., Box 308, Santa Fe, archts.

HEAVY CONSTRUCTION—LB & CA

Thornton Bros. Co., 1343 Dayton Ave., St. Paul, Minn. LB $328,812. (5 bidders). sports stadium, incl. sewer, and water mains, east of Snelling Ave. between Northern Pacific and Chicago & Northwestern tracks, ST. PAUL, MINN. City, B. T. Holland, comr. Parks, Playgrounds & Public Bldgs., L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. Bids Mar. 6. CD 3/2.

▲ **IOWA**—State Hy. Comn., Ames,

Iowa—**Booth & Olson, Inc.**, 529 Insurance Exchange Bldg., Sioux City, Iowa, LB $543,270. c. conc. 1.882 mi. U-200 (8), Black Hawk Co.;

Iowa—**Hallett Constr. Co.**, Crosby, Minn., LB $93,382 c. conc. 2.608 mi. S-1276 (3), Calhoun Co.; LB $103,855. c. conc. 3.146 mi. H-436-56, Greene Co.; LB $128,721. c. conc. 4.009 mi. SN-847, Greene Co.;

Iowa—**Cameron, Joyce & Co.**, Keokuk, Iowa, LB $526,650. c. conc. 8.654 mi. F-57 (7), Cedar Co.; LB $307,269 c. conc. 5.459 mi. F-147 (9), Clinton Co.;

Iowa—**Fred Carlson Co.**, Decorah, Iowa, LB $360,944 c. conc. 5.919 mi. F-909 (9), Johnson and Linn Counties; LB $500,099. c. conc. 8.16 mi. F-71 (11) Washington Co.;

Iowa—**Ronald Kenyon Constr. Co.**, West Des Moines, Iowa, LB $174,000. c. conc. 2.58 mi. FN-70, Mahaska Co.; LB $168,878, c. conc. 1.739 mi. Widn F-260 (5), Marion Co.;

Iowa—**Central Constr. Co.**, Indianola, Iowa, LB $621,905. c. conc. 2.26 mi. U-206 (14), Polk Co.;

Iowa—**Jay W. Craig Co.**, 1814 N. E. California St., Minneapolis, Minn., LB $117,061. b. conc. 6.016 mi. S-1388 (3), Dickinson Co.;

Iowa—**Lee & Johnson, Inc.**, 215 Insurance Exchange Bldg., Sioux City, Iowa, LB $341,631. b. conc. 9.315 mi. Special F-1015 (3), Lyon Co.;

Iowa—**Western Eng. Co.**, Harlan, Iowa, LB $79,283. b. conc. 3.897 mi. T-AH-56, O'Brien Co.; LB $93,738. b. conc. 5.04 mi. T-IP-56, O'Brien Co.; LB $94,801. b. conc. 5.013 mi. S-725 (4), O'Brien Co.;

Iowa—**Norris Constr. Co.**, Ottumwa, Iowa, LB $103,246. b. conc. 2.889 mi. Special F-1044 (2), Pocahontas Co.; LB $144,816, b. conc. 4.129 mi. Special F-1045 (2) Pocahontas Co.;

Iowa—**J. P. Strother Constr. Co.**, Eldon, Iowa, LB $295,402, grading 6.085 mi. Special FN-854 (1), Allamakee Co.;

Iowa—**Mickle & Ross Constr. Co.**, Newton, Iowa, LB $138,127. grading 6.565 mi. Special F-469 (5), Cedar Co.;

Iowa—**Wilbur Nielson Co.**, Blencoe, Iowa, LB $208,710 grading 10.754 mi. Special F-772 (6), Jasper Co.;

Iowa—**Gus Osterman & Sons**, Ocheyedan, Iowa, LB $107,940. grading 9.936 mi. Special FN-573, Mitchell and Worth Counties. Bids Mar. 6. CD 2/23.

▲† **McCormick Erling Co.**, Fargo, N. D., **Paul R. Kemper**, 10 Kemper Bldg., Minot, N. D., **Tri-State Excavating Co.**, Box 1566, Fargo, N. D. and **Deizer Constr. Co.**, 718 N. 17 St., Bismarck, N. D. CA $3,051,928, Schedule 1, roads and utilities, Grand Forks Air Force Base, ENG-25-066-56-48, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Jan. 27. CD 2/7, under LB.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Iowa, LB $1,476,000, spillway earthwork, Stage I, Oahe Reservoir Proj., near Pierre, Inv. 25-066-56-41, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 7.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—**Broce Constr. Co.**, Woodward, Okla., LB $72,637, est. $70,364, (7 bidders) asph. stabil. base, with single bit. surf. 6.056 mi. County Rd. at Tyrone, Texas Co.;

Okla.—**Brooks & McConnell**, 5200 N.W. 16 St., Oklahoma City, Okla., LB $509,836, est. $507,151, (9 bidders) c. conc. pavement, two bridges 1.884 mi. US 66 in El Reno, Canadian Co.;

Okla.—**Cohenour Constr. Co.**, Gilbert Bldg., Ardmore, Okla., LB $135,419, est. $135,535 (1 bidder) stabil. aggregate base with rock asph. surf. 3.379 mi. Hy. 53 at Graham, Carter Co.;

Okla.—**Curry Material Co.**, Antlers, Okla., LB $156,852, est. $153,797, (4 bidders) stabil. aggregate base with rock asph. surf. 4.81 mi. Hy. 21 at Moon to Haworth, McCurtain Co.; LB $103,762, est. $100,960, (4 bidders) stabil. aggregate base with rock asph. surf. 3.05 mi. Hy. 21 at Moon, McCurtain Co.;

Okla.—**John Erts Co.**, 2201 Classen St., Oklahoma City, Okla., LB $78,188, est. $75,940, (7 bidders) asph. stabil. base with single bit. surf. course 2.97 mi. Hy. 15 at Pawnee, Pawnee Co.; LB $121,410, est. $121,843, (7 bidders) asph. stabil. base, single bit. surf. course 5.703 mi. Hy. 45 at Arnett, Ellis Co.;

Okla.—**Henryetta Constr. Co.**, Henryetta, Okla., LB $77,390, est. $72,460, (6 bidders) soil cement, double bit. surf. county road at Henryetta, Okmulgee Co.;

Okla.—**Horn & Smith**, Lawton, Okla., LB $135,055, est. $144,649, asph. stabil. base, single bit. surf. 4.307 mi. Hy. 90 at Eldorado, Jackson Co.;

Okla.—**W. E. Logan & Son**, Barnes Bldg., Muskogee, Okla. LB $92,979, est. $108,390 (4 bidders) grade, drain 3.963 mi. Hy. U.S. Hy. 59, south of Stapp, LeFlore Co.;

Okla.—**Ottinger Constr. Co.**, 6100 Camp Bowie Blvd., Fort Worth, Tex., LB $103,338, est. $109,252, (3 bidders) b. conc. paving and wid'n. 0.892 mi. 9th and Main Sts. in Durant, Bryan Co.;

Okla.—**Ryan & Phelps**, 7512 N. Western St., Oklahoma City, Okla., LB $209,185, est. $203,551, (5 bidders) stabil. aggregate base with b. conc., wid'n. 3.146 mi. U.S. 81 in Duncan, Stephens Co.;

Okla.—**Smith Bros.**, Noble, Okla., LB $218,912, est. $215,487, (5 bidders) asph. stabil. base with single

(Continued on page 85)

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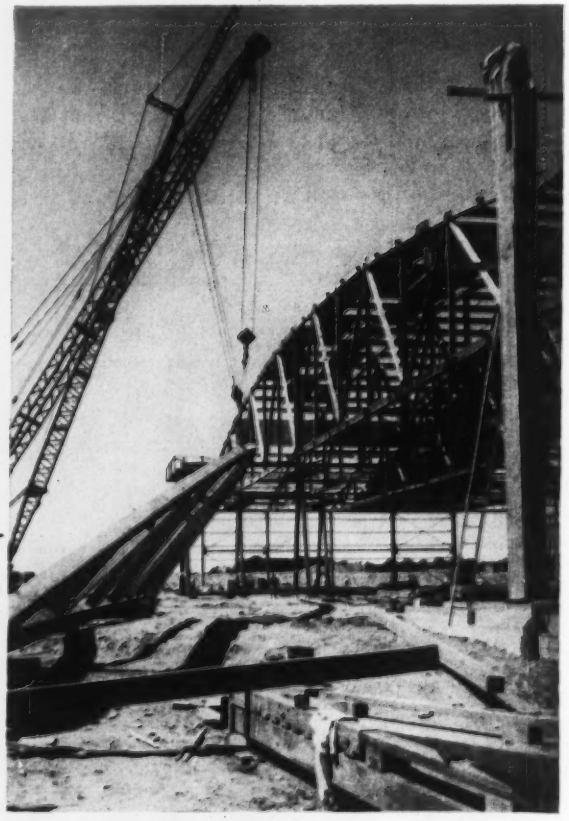

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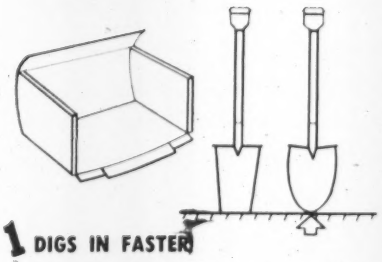
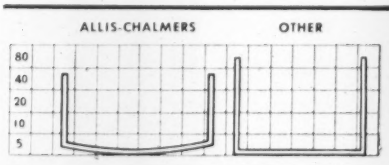
5 BIG REASONS WHY ALLIS-CHALMERS SCRAPERS move more dirt at lower cost

Check over these pull scraper features point by point. See for yourself how performance makes dollars when design makes sense.



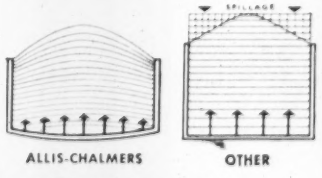
1 DIGS IN FASTER

The penetrating ability of a round-end spade helps illustrate how the curved and offset cutting edge on Allis-Chalmers scrapers concentrates all the tractor horsepower on the center section during initial penetration.



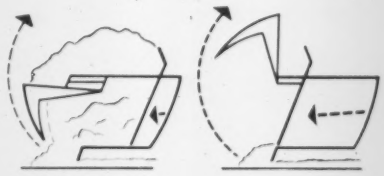
2 LESS LOADING RESISTANCE

Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.



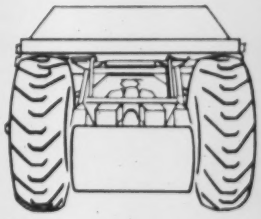
3 HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.



4 POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes forward. High apron lift prevents any possibility of material's jamming. Anything that can be put into the bowl can be easily ejected.



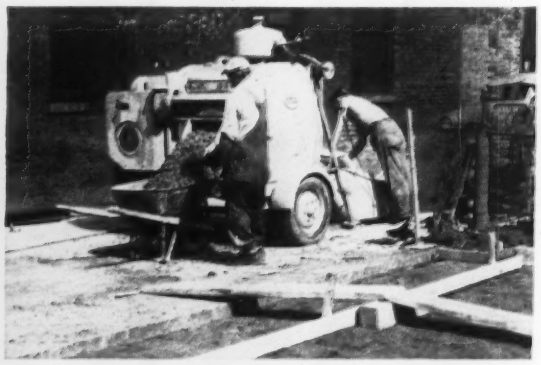
5 HAULS, MANEUVERS EASILY

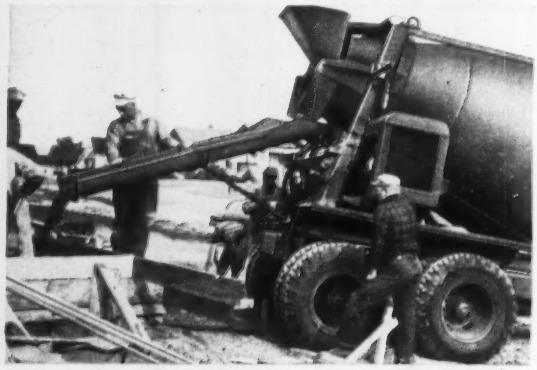
The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.

THIS ALLIS-CHALMERS MODEL 315 SCRAPER has a struck capacity of 15 cu yd (20 cu yd heaped) and incorporates all the job-proved advantages found in other Allis-Chalmers scrapers, 4.7 to 20 cu yd heaped capacities.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS





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CHAIN BELT REX COMPANY®

CONSTRUCTION MACHINERY

MOTO-MIXERS® MIXERS PUMPS PUMPCRETES® PAVERS

(Continued from page 82)

bit. surf. 7.907 mi. Hy. 95 at Goodwell, Texas Co. Bids Mar. 6. CD 2/27.

Lone Star Gas Co., 301 S. Harwood St., Dallas, Tex. Own Forces. $200,000 gas lines rehabilitation; $175,000 install gas meters, regulators, DALLAS, TEX. CD 2/23.

▲† Mountain States Constr. Co., 9200 W. Colfax St., Denver, Colo, LB $1,177,377, diversion of Kettle Pine Creeks and relocation of Hy. 85-87, U. S. Air Air Force Academy, Inv. IFB 05-613-56-12, COLORADO SPRINGS COLO U. S. Govt., Dpt. Air Force, P. O. Box 1670, Colorado Springs, Colo. Bids Mar. 20. CD 2/9.

▲† Robert E. McKee General Contractor, Inc., Box 1706, Santa Fe, N. M. CA $1,431,099, taxiways and airfield lighting, Walker Air Force Base, ROSWELL, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. CD 2/28, under LB.

BUILDINGS—LB & CA

▲ Multin Realty & Development Co., 8147 Delmar Blvd., University City 24, Mo. CA Est. $3,000,000. 152 RESIDENCES, on 83 acre Biscayne Heights subdivision in Warson Woods area, off Woodlawn Ave. between Clayton and Manchester Rds., ST. LOUIS COUNTY, MO. Stanley Multin, 8147 Delmar Blvd., University City 24, Mo.

▲ Joseph Leopold, 19 Country Aire, St. Louis County 22, Mo. Owner Builds. Est. $1,000,000. 33 ranch RESIDENCES, on 41 acre tract in Chapel Hill subdivision, Clayton Rd. across from entrance to the Principia campus, ST. LOUIS COUNTY, MO.

George A. Fuller Co., Gibraltar Life Bldg., Dallas, Tex., LB $509,750, Women's DORMITORY, DALLAS, TEX. Southern Methodist University, Dallas, Tex. Bids Mar. 20. CD 2/15.

▲ Blume, The Homebuilder, 5423 Old Richmond Rd., Houston, Tex. Owner Builds. $450,000, 30 DWELLINGS; $357,500, 16 DWELLINGS; $368,800, 20 DWELLINGS, HOUSTON, TEX. Grand total $1,176,300. CD 2/17.

▲ Riggs & Majors, Inc., 402 Galloway St., Mesquite, Tex. Owner Builds. $418,500, 23 masonry DWELLINGS; $365,000, 11 DWELLINGS; $350,000, 7 DWELLINGS, MESQUITE, TEX. Grand total $1,133,500. CD 2/27.

▲ Yellowstone Co., Courthouse, Billings, Mont. rejected bids Feb. 21, 8 story, 100x140 ft. concrete, steel COURT HOUSE, BILLINGS, MONT. LB $1,583,600. CD 2/28, under LB.

L. R. Foy Constr. Co., 417 N. Main St., Hutchinson, Kan., CA, $534,610, main POST EXCHANGE, No. 25-066-56-67, CAMP CARSON, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 10, awarded Mar. 1. CD 2/16, under LB.

Gerald H. Phipps, Inc., Box 2068, Denver, Colo., CA, $950,000, 1 story, 89,760 sq. ft. TRUCK TERMINAL, 3 story, 36,480 sq. ft. OFFICE, 1 story, 52,800 sq. ft. MAINTENANCE BLDG., DENVER, COLO. Denver-Chicago Trucking Co., 2501 Blake St., Denver, Colo. Bids Feb. 2. CD 2/13, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ Calif., Los Angeles—BA 3/30 "Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Proj. 24, Michillinda Ave., storm drain, Arcadia, Pasadena, Sierra Madre. $2,000,000. H. E. Hedger, co-owner, engr. CD 11/7/52.

BUILDINGS—BA

▲ Calif., San Jose—CLASSROOM—BA 4/10—State Div. Architecture, 1120 N. St., Sacramento, 3 story prestressed concrete lift slab classroom bldg., San Jose State College. $1,000,000. Plans deposit $50. CD 1/27.

▲ Calif. Los Angeles—OFFICE—BA 4/18—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 4 story, 152,000 sq. ft., branch office for State Dpt. Employment. $2,000,000. Plans deposit $25. CD 1/27.

HEAVY CONSTRUCTION—LB & CA

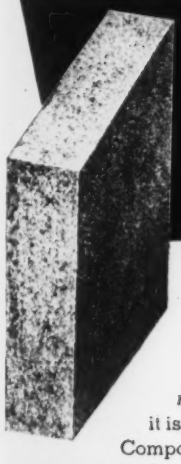
Wheelwright Constr. Co., Ogden, Utah, CA, $821,790 Sections I and II, outlet sewer and relief sewer, OGDEN, UTAH. Central Weber Sewer & Improv. Dist., Ogden, Utah. Bids Feb. 15, awarded Mar. 5. CD 2/24, under LB.

▲ Robert McKee Co., 4701 San Fernando Rd. West, Los Angeles, Calif., LB $7,342,000 steel construction; hangar; Moses Lake Flight Center, Larson Air Force Base, MOSES LAKE, WASH. Boeing Airplane Co., Engineering Bldg., Seattle, Wash. Bids Mar. 8, CD 2/1;
Howard S. Wright & Co., 414 Pontius St., Seattle, Wash., LB $7,356,360 for concrete construction (Moses Lake, Wash.)

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles.
J. E. Haddock Ltd. & R. M. Price Co., 3538 E. Foothill Blvd., Pasadena, Calif., LB $5,929,776, est. $5,800,000. (6 bidders) 16 bridges, grading, paving 6.5 mi. Santa Ana Freeway for 6-lane divided freeway, Los Angeles and Orange Counties. Bids Mar. 6. CD 2/10.

▲ Fred J. Early Jr. Co., Inc., 22138 S. Vermont Ave., Torrance, Calif. CA, $2,426,894, est. $1,500,000. Proj. 70, Slauson Ave., Storm Drain, Section No. 6, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Feb. 17, awarded Feb. 28. CD 2/24, under LB.

When Concrete joints must be kept filled



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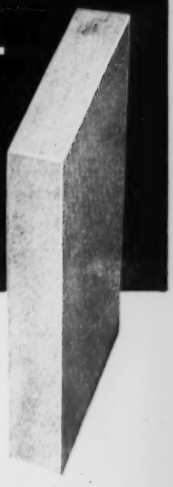
When joints in exposed concrete must be inconspicuous...



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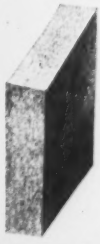

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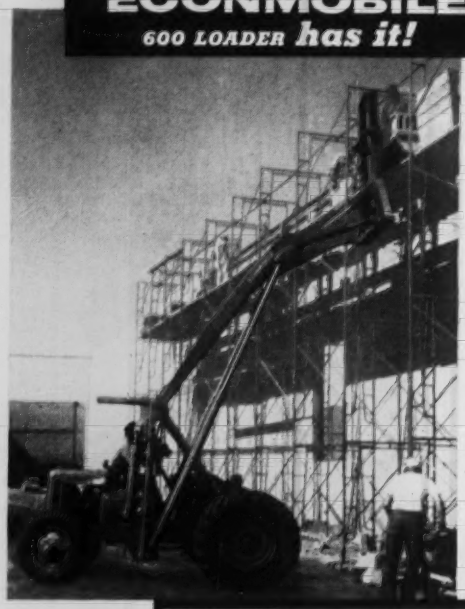

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Milwaukee and Twin Cities—Denver—New Orleans

▲† Suite Inc., 5467 San Fernando Rd., Los Angeles, Calif. LB $1,127,127. (6 bidders) visitors quarters, Edwards Air Fore Base, ENG-04-353-56-86, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 6.

BUILDINGS—LB & CA

Morley Bldg. Co., 7700 Sunset Blvd., Los Angeles, Calif. CA, $759,000. two gymnasiums at Narbonne HIGH SCHOOL, Lomita, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 15, awarded Feb. 20. CD 2/27, under LB.

▲ R. J. Daum Constr. Co., 12537 S. Cerise Ave., Hawthorne, Calif. LB $1,950,000. (4 bidders) Branch JUVENILE HALL FACILITY, LOS ANGELES, CALIF. Los Angeles Co. Hall of Records, Los Angeles, Calif. Bids Mar. 7. CD 2/20.

▲ Harvey A. Nichols Co., 926 E. Slauson Ave., Los Angeles, Calif. LB $1,557,131. (8 bidders) John Muir SCHOOL Addns., PASADENA, CALIF. Pasadena City High School Dist., 315 S. Hudson St., Pasadena, Calif. Bids Mar. 6. CD 2/17.

Slattebo-Knox, 5175 W. Washington Blvd., Los Angeles, Calif. LB $516,000. Unruh SCHOOL, PUENTE, CALIF. Hudson School Dist., 15839 E. Rowland St., Puente, Calif. Bids Feb. 29. CD 2/17.

▲ Barrett Constr. Co., 1800 Evans St., San Francisco, Calif. Owner Builds, $8,000,000, 500-HOME SUBDIVISION, College Highlands Tract, RICHMOND, CALIF. Vernon DeMara, 2161 Shattuck Ave., Berkeley, archt.

Stolte, Inc., 5467 San Fernando Rd., Los Angeles, Calif. CA, $970,000. NURSES HOME and SCHOOL, SANTA ANA, CALIF. Orange Co., Court House, Santa Ana, Calif. Bids Feb. 21, awarded Feb. 29. CD 3/1, under LB.

▲ Secret & Fish, 1909 W. Whittier Blvd., Whittier, Calif. CA, $1,238,287. Temple City High SCHOOL, TEMPLE CITY, CALIF. Temple City Unified School Dist., 9516 E. Longden Ave., Temple City, Calif. Bids Feb. 17, awarded Feb. 29. CD 2/24, under LB.

Acme Constr. Co., 827 13 St., Modesto, Calif., CA $584,357, 64,000 sq. ft., brick milk carton PLANT with 200-car parking area, TURLOCK, CALIF. International Paper Co., 220 E. 42 St., New York, N. Y. Bids Mar. 2. CD 3/7.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ ALBERTA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,

Standard Gravel & Surfacing of Canada Ltd., 5340 First St. S.W., Calgary, Alta., CA $2,074,440. grading, culverts, base course and prime 7.8 mi. Trans-Canada Hy., Banff National Park. Awarded Feb. 28. CD 2/9, under LB.

▲ Shawinigan Eng. Co. Ltd., 600 Dorchester St. W., Montreal, Que. CA $50,000,000. design and construct outdoor power plant, St. Maurice River, near La Tuque, 6 generating units, dam will raise water level and necessitate 9-mile diversion of railway track, QUEBEC. Shawinigan Water & Power Co., 600 Dorchester St. W., Montreal, Que. CD 6/24/53.

BUILDINGS—LB & CA

▲ Beaver Constr. Co. Ltd., 175 W. 5 Ave., Vancouver 10, B. C., CA, $1,897,195. 4 story, rein.-con. HOME FOR AGED and AUDITORIUM, PORT COQUITLAM. B. C. B. C. Govt., Parliament Bldgs., Victoria, B. C. Bids Feb. 15. CD 3/2, under LB.

Jolley Constr. Co., 860 Valley Way, Niagara Falls, Ont., CA $500,000, 112x335 ft. PLANT addn. on north side, 67x451 ft. on west side, brick, rein.-con., structural steel constr., NIAGARA FALLS, ONT. Canadian Ohio Brass Co. Ltd., 1881 Thorold Rd., Niagara Falls, Ont. Awarded Mar. 1.

▲ Guy B. Cossette Ltd., 12180 Jasmin St., Montreal, Que. Gelinas & Lalonde Constr., Laval des Rapides, Que., and M. Riopelle Ltd., Laval des Rapides, Que. CA Est. $1,000,000. 75-unit HOUSING, MONTREAL, QUE. Laval Gardens, Breton St., Laval des Rapides, Que.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

† Spain—PUMPING STATIONS—BA 3/28—Bureau Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., U.S.A. (American contractors only), POL pumping stations, various locations (Spanish Air Base Program). Extended date. CD 2/17.

HEAVY CONSTRUCTION—LB & CA

† Hydrocivil, Madrid, Spain, LB $569,342. Contr. Group 8 facilities (Spanish Air Base Program) ROTA, SPAIN. Bureau Yards & Docks, Navy Dpt., 18th St. and Constitution Ave., N.W. Wash. 25, D. C., U. S. A. Bids Feb. 29. CD 2/17.

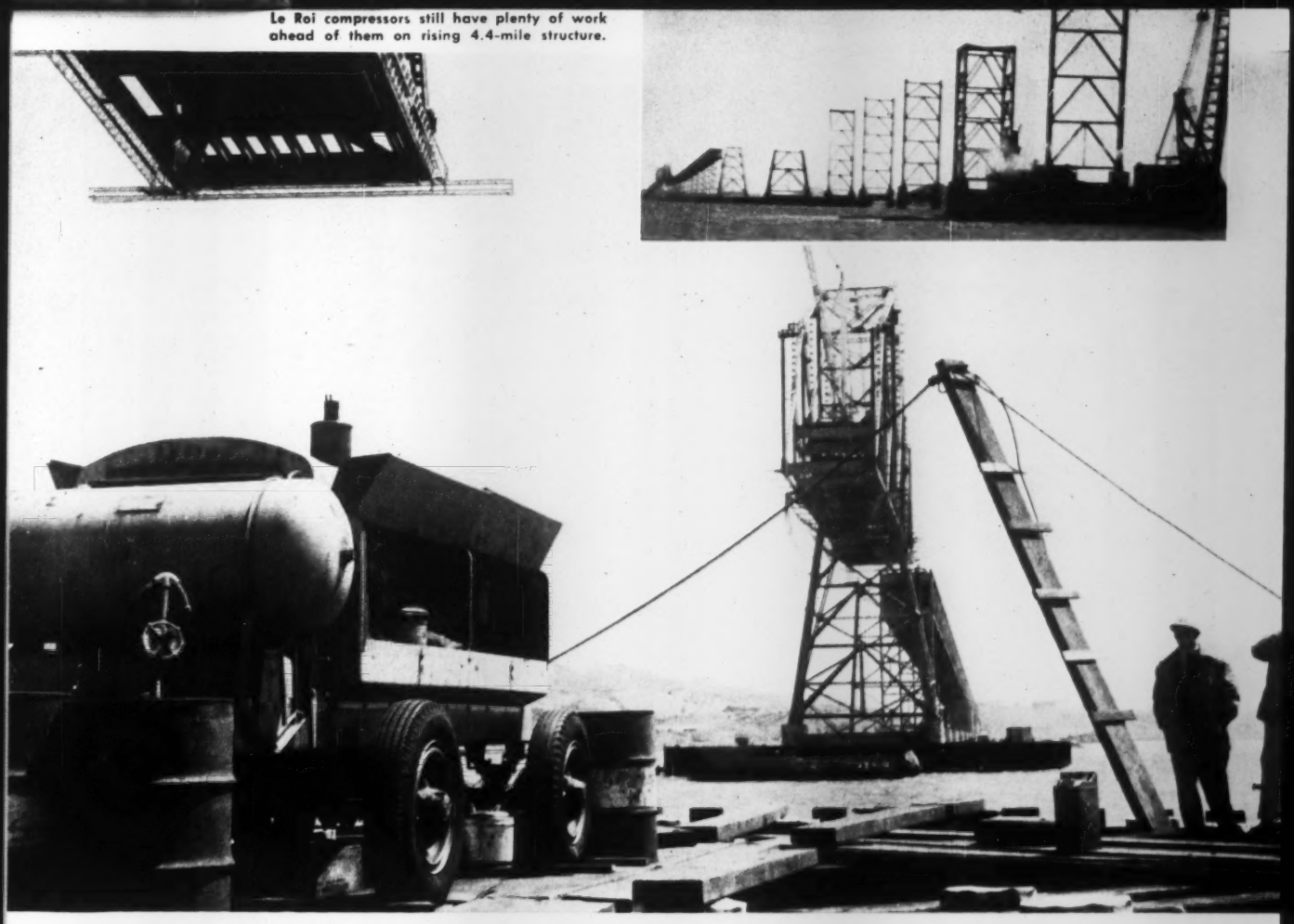
PROPOSED PROJECTS

WATER SUPPLY

▲ Calif., La Mesa—La Mesa, Lemon Grove, Spring Valley Irrigation Dist., 4769 Spring St., voted $5,230,000 bonds, Feb. 23 second supply line to San

(Continued on page 88)

Le Roi compressors still have plenty of work ahead of them on rising 4.4-mile structure.



Sea-Going Air Power Helps Assemble 4.4-mile Bridge

Air compressors are located at hard-to-get-at pilings

Some working more than two miles from land

Nearly a dozen Le Roi Airmaster compressors provide dependable power for air tools to speed steel assembly

Choppy waves and swirling currents tug at the pilings that support nearly a dozen Le Roi compressors. Gusty winds howl through the steel work high above the whitecaps. Yet progress is unhampered on the new $62 million 4.4-mile bridge across San Francisco Bay.

Dependability and easy starting of prime importance. The 600-cfm Le Roi compressors placed out in the bay provide air power for air tools used on steel assembly work along the 21,343-foot span. It's difficult to reach these units for servicing — yet reliable, uninterrupted performance is essential. That's why Le Roi compressors were selected. Exposed to driving, moisture-laden winds and piercing salt spray, these easy-starting, trouble-free air compressors keep plenty of air power moving through the hose. Further proof of the popularity of Le Roi compressors in the "Bay" area is found in the fact that Clementina Ltd. uses a fleet of 120 Le Roi's for rental purposes.

A new method of handling long trusses was developed. Because of the high winds and tricky tidal currents, a set of 280-foot aluminum-alloy supporting spans was built which allowed on-site erection of the permanent steel spans.

Second largest bridge. Contractors on this new bridge to link Richmond and San Rafael, California are Judson Pacific, Murphy, Kiewit. The huge 4.4-mile span is surpassed only by the famed San Francisco Bay Bridge. Highest tower on this new structure rises 325 feet above the water.

Use Le Roi air power on all your jobs for reliable performance under all conditions. See your Le Roi distributor today.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin also manufactures the Tractair and stationary air compressors, air tools and heavy-duty engines. Write today for information about any of these products.

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(Continued from page 86)

Diego Colorado River Aqueduct, La Mesa, Lemon Grove and Spring Valley. J. S. Longwell, 405 14 St., Oakland, consult. engr. M. J. Shelton, c/o owner, engr. CD 11/16.

▲ **N. C., Greensboro**—City, Boyd Morris, mayor, Greensboro, voted bonds Mar. 5, water imprvs., incl. elevated steel tank in northwest sect. of city. $2,000,000. CD 7/13/53.

▲ **S. D., Rapid City**—City, City Hall, imprv. water sys. $2,500,000.

▲ **Tex., Irving**—City, City Hall, bond election Mar. 31, c. i. water lines, $1,716,000; water storage, $150,000; WW sys. rehabilitation, $100,000. CD 2/28.

▲ **Tex., Rusk, Jacksonville, Palestine**—Upper Neches River Municipal Water Auth., c/o Frank Ebaugh, pres., Jacksonville, voted $9,500,000 bonds Mar. 6, dam and reservoir on Upper Neches; relocate Hy. 155 between Tyler and Frankston; water pipe mains from dam to Rusk, Palestine and Jacksonville. Forrest & Cotton, 803 Praetorian Bldg., Dallas, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Ill., Springfield**—City, City Hall, $3,200,000 bond election Apr. 10, sewerage projects, incl. enlarging sewage plant. CD 4/7/53.

▲ **Mo., St. Louis Co.**—Metropolitan St. Louis Sewer Dist., William Q. Kehr, exec. dir., 506 Olive St., St. Louis 1, 10 mi. trunk sewers in Gravois Creek watershed to serve about 23 sq. mi. territory in southern St. Louis County, incl. parts of Webster Groves and Kirkwood all of Crestwood and Oakland and large unincorporated residential sections of county. $3,000,000. CD 8/4/44.

▲ **Neb., Lincoln**—City, City Hall, sewer expansion $4,000,000. Survey engineers made survey and filed report with recommendations for above amount of constr. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 8/25.

▲ **N. Y., Rochester**—City, City Hall, addn. to main sewage treatment plant and enlarging 4 trunk sewers, $8,100,000. CD 11/28/45.

▲ **N. C., Greensboro**—City, Boyd Morris, mayor, City Hall, voted bonds Mar. 5, sewer imprvs., enlarging plant facilities at S. Buffalo Disposal Plant. $2,000,000. CD 1/26/53.

▲ **Tex., Irving**—City, bond election Mar. 31, sanitary sewerage sys. rehabilitation work, $90,000; sewage disposal unit, $165,000; storm sewers, $400,000; sanitary sewer lines, $1,250,000. CD 2/28.

BRIDGES

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,
Blue Earth Co.—bridge over Minnesota River in Mankato. $1,000,000. To go ahead in 2 or 3 years.
Wright and Sherburne Counties—bridge over Mississippi River between Clearwater and Clear Lake. $800,000. To go ahead in 2 or 3 years. A. E. LaBonte, bridge engr.

▲ **WISCONSIN AND MINNESOTA**—Wisconsin State Hy. Comn., State Office Bldg., Madison, Wis., and Minnesota State Hy. Dpt., 1246 University Ave., St. Paul, Minn.,
Lincoln Co., Wis. and Goodhue Co., Minn.—constr. bridge over Wisconsin-Mississippi River between Red Wing, Minn. and Hager City, Wis., replacing existing bridge, 2 mi. proj. $3,000,000. A. Benesche & Assoc., 111 W. Jackson St., Chicago, Ill., consult. engrs. Constr. in 1957.

STREETS AND ROADS

▲ **Calif., San Jose**—City, City Hall, bond election May 8, municipal imprvs., incl. streets, sewers and parks, etc. $4,950,000. CD 10/16/44.

▲† **D. C., Wash., Virginia, Maryland and West Virginia**—National Park Service, Dpt. Interior, 19 and C Sts. N.W., Wash. 25, D. C., George Washington Parkway complete grading D. C. line to Carderock, Md., $586,000; George Washington Parkway, 3 bridges, 5 substructures $1,460,000; C. & O. Canal Parkway Cumberland to Great Falls, Md., repairs to canal structures $80,000, Ft. Dupont bridge approaches, $450,000 reconstr. Beach Dr. in Rock Creek Park, $210,000; replacing Kalmia bridge Rock Creek Park, $187,500; misc. minor road and trail items, $168,400. CD 5/25/43.

▲ **Iowa, Webster City**—Hamilton Co., Webster City road imprvs. on 52 miles. $1,125,940.

▲† **MISSISSIPPI, TENNESSEE, ALABAMA**—National Park Service, Dpt. Interior, 19 and C Sts. N.W., Wash. 25, D. C.
Natchez Trace Parkway—grading, draining, base course US 45-US 78 (3D3), $483,600; 2 bridges and 3 grade separations R-18, R-20, R-138, R-248, $471,900; Miss. Parkway, 6 overpasses R-22 (3D) $75,000, 4 bridges, 1 culvert R-23, (3D1-4) $392,500; grading, drainage, base course Pontocola to Miss. Parkway $1,500,000; Tupio Headquarters, maintenance area misc. shops, bldgs., fire house, wood shop and equipment storage, $174,600; grading, draining, base course Hy. 20 to Little Buffalo Rd., $950,000; misc. small job $186,100. CD 7/19, under Mississippi.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
Burke Co.—grading, structures, US 70 from N. C. Rte. 18 west toward Glen Alpine, $700,000.
Catawba Co.—grading, structures, US 70 from Catawba River west to Conover, $500,000.
Durham and Orange Counties—grading, structures, US 70 from Eno Station to west end of Durham By-Pass for dual laning to Interstate Standards, $650,000.
Forsythe Co.—East Sect. of Winston-Salem Expressway, Winston-Salem, $1,600,000.
Johnson and Wilson Counties—grading, drainage, structures, US 301 from Kenly to point 1 mi. south of Lucama, $700,000.
Orange and Alamance Counties—3 in. wearing surf. on US 70 from Efland to NC 49, $260,000.
Robeson Co.—Paving US 301 from south end of Lumberton By-Pass to US 74, $250,000. Wm. H. Rogers, Jr. c/o owner, state hy. engr.

▲ **N. C., Greensboro**—City, Boyd Morris, mayor, Greensboro, voted bonds Mar. 5, new streets, $2,250,000; street paving, $500,000.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
Armstrong Co.—Rte. 422 at Kittanning, $3,000,000.
Chester Co.—by-pass for Rte. 30 around Coatesville and Downingtown, between Sadsburyville and Exton, $15,000,000.
Clarion Co.—Rte. 322 at Clarion, $6,000,000.
Fayette Co.—Rte. 40 at Eummit, $10,000,000.
Fayette and Washington Counties—Rte. 40 at Brownsville, $7,000,000.
Fulton and Franklin Counties—Rte. 30 at McConnellsburg, $4,000,000.
Lackawanna Co.—Moosic St., Rte. 307, Scranton, $1,750,000.
Lancaster and Chester Counties—Rte. 30 at Gap, $2,500,000.
Northumberland Co.—Rte. 12, Bethlehem, $7,500,000.
Somerset and Bedford Counties—Rte. 56 at Windber, $2,500,000.
Venango Co.—Rtes. 8 and 62, Franklin, $1,700,000.
Rte. 322 at Franklin, $1,000,000.
Westmoreland Co.—Rte. 31 through West Newton.
Westmoreland and Fayette Counties—Rte. 31 at Laurelville, $1,000,000.
York Co.—Rte. 111 at Violet Hill, $12,000,000. Foregoing is to rebuild to minimize steep hills and dangerous curves.

▲ **Tex., Liberty**—Liberty Co., road work, county wide, $2,500,000. CD 12/3/54.

▲ † **Virginia and North Carolina**—National Park Service, Dpt. Interior, Interior Bldg., 19 and C Sts., N.W. Wash 25, D. C.
IFG, bit. paving, $405,000;
IH3, James River Bridge and grading, $900,000.
2F1, North Carolina, grading, draining, stone base, three grade separations, Deep Gap to Triplett Rd. $1,062,500.
2F12, Deep Gap Grade separation, R. $155,000-$156,300.
2Y1a, slope dressing and base course Wolf Laurel Gap to Big Watch Gap, $208,800.
2Z1a, completion of grading, base course, Big Watch Gap to station, $248,800.
2Z3, Oconaluftee River Bridge and tunnel portals, $184,500.
Peaks of Otter Information Center and Maint. bldgs. alterations, water sys. addn., sewage sys. and landscaping, $81,000.
Asheville Headquarters, office shops, sewage sys. maintenance, $143,400, Blue Ridge Parkway.

EARTHWORK, WATERWAYS

▲ **Conn., Hartford**—Park River Flood Control Comn., City Hall, Park River flood control proj., lower stream bed north branch; raising banks of Park River; Hartford, West Hartford, Bloomfield, and Newington $10,000,000, Charles W. Cooke, 550 Main St., c/o owner, engr. Cemetery Brook Flood Control Proj., enclose brook in conduit, elimination of Princeton St. Drainage Ditch, $1,000,000, Winfred W. DeMay, 550 Main St., city engr. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., consult. engrs., on both projects. CD 2/13.

AIRPORTS

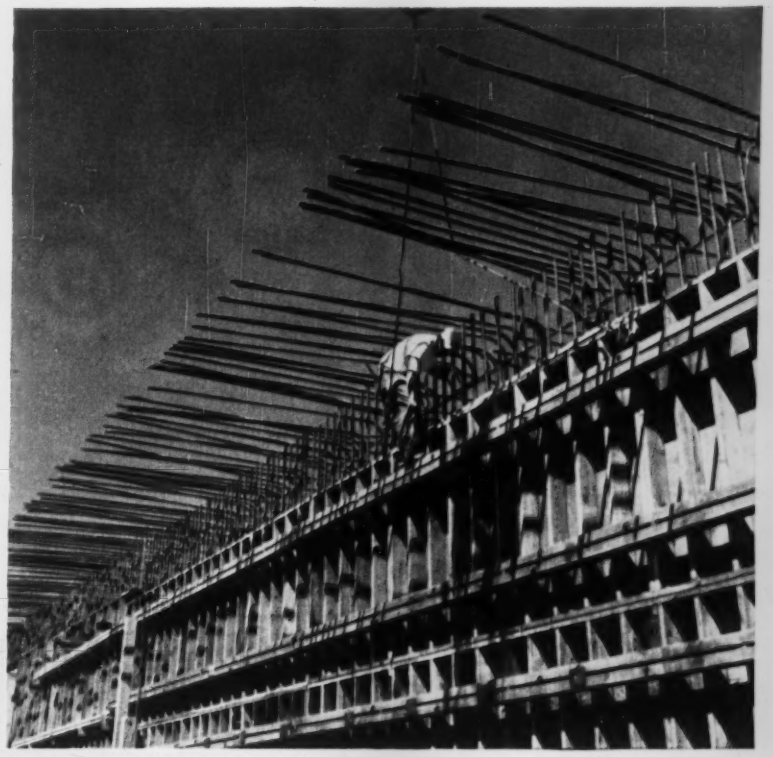
▲† **Calif., Travis Air Force Base**—DWELLINGS—Purch. & Contrg. Office, Travis AFB, Calif., 500-family dwelling units. $6,500,000.

▲ **Pa., Phila.**—AIRPORT IMPRVS.—City, Dpt. Procurement, City Hall Annex, addnl. terminal bldg., area constr., $75,000, Constr. in 1957; addnl. terminal bldg., area constr., $500,000, Constr. in 1960; addnl. terminal bldg., area constr., $1,050,000, Constr. in 1959; addnl. terminal bldg. area, $75,000, Constr. in 1958; addnl. terminal bldg., area constr., $75,000; runway extensions, connecting taxiways, $150,000, Constr. in 1956; exten. connecting taxiways, etc., $260,000, Constr. in 1960; runway exten. connecting taxiways, $400,000, Constr. in 1957; taxiways and apron imprvs., other facilities, $750,000; taxiway, apron imprvs., runway connections, $110,000, Constr. in 1958; taxiway and apron imprvs., runway connections $220,000; taxiway and apron imprvs., runway connections, $350,000, Constr. in 1961; development new areas for hangars, other facilities, $200,000, Constr. in 1956; development of new areas for hangars, other imprvs., $300,000, Constr. in 1958; development of new areas for hangars, other facilities, $200,000, Constr. in 1960; Church Creek storm water conduit, $360,000. Constr. in 1957; runway and taxiway constr., $450,000, Constr. in 1958, all for Phila. International Airport, Clyde W. Race, Jr., airport engr. CD 8/19.

▲ **Wash., Renton**—FIELD POSITIONS—Boeing Airplane Co., 7755 E. Marginal Way, Seattle, Zone 4 field positions at airport for aircraft parking $1,400,000. Bids likely this year.

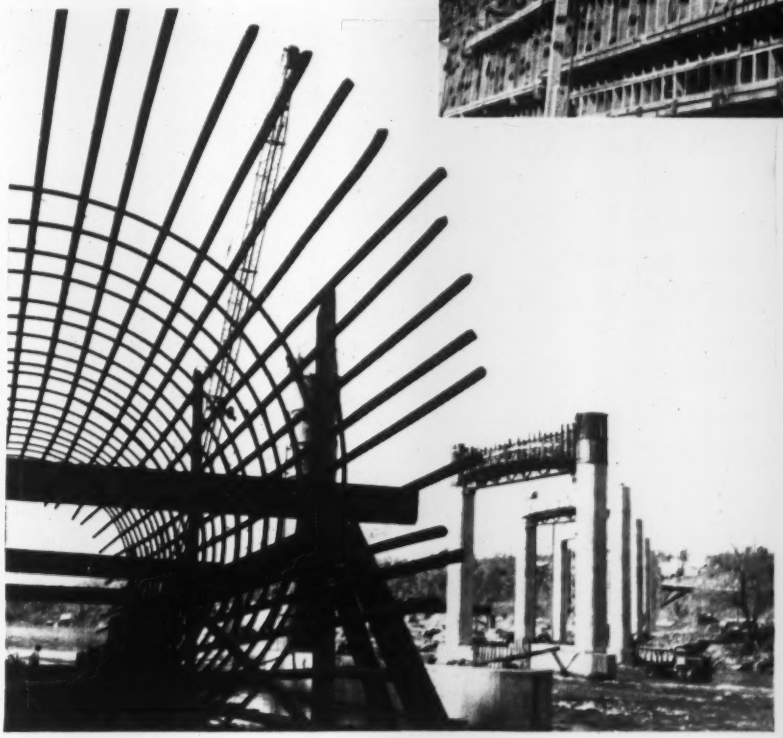
(Continued on page 90)

Fabricated Bars for Two Major Turnpikes



Constructing one of the overpasses along the Massachusetts Turnpike at Weston. *General Contractor:* B. Perini & Sons, Inc., of Framingham, Massachusetts.

A new bridge crossing the Lehigh River near Lehighton is one of the major structures along the Pennsylvania Turnpike's Northeast Extension. *General Contractor:* Brayman Construction Co., Pittsburgh.



Two of the biggest highway projects in the East are the Pennsylvania Turnpike's Northeast Extension and the Massachusetts Turnpike.

In Pennsylvania, the new 110-mile extension will link Philadelphia's port and industrial facilities with the anthracite coal regions to the north.

In Massachusetts, the cross-state Turnpike will connect Boston with the western border, eventually linking with the New York State Thruway.

For both these important highways Bethlehem is supplying substantial tonnages of fabricated reinforcing bars for bridges, underpasses and overpasses, and other concrete construction.

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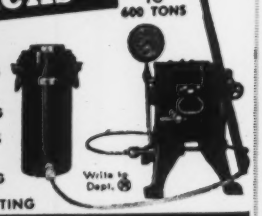

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(Continued from page 88)

▲ Wash., Seattle—FIELD POSITIONS—Boeing Airplane Co., 775 E. Marginal Way, Seattle, Zone 4, field positions at Boeing Field for aircraft parking $1,100,000. Work in 1957-58.

▲ Wash., Seattle—RUNWAYS—Port of Seattle, Bell St. Terminal, Zone 1, extend runways, Seattle-Tacoma International Airport, $1,500,000. G. T. Treadwell, c/o owner, ch. engr. Bids this year. CD 12/21/54.

LATIN AMERICA

▲ Mexico, Coatzacoalcos—Srria. de Recuros Hidraulicos, P. de Reforma, 69, Mexico City, plans river bridge. $1,600,000.

PUBLIC BUILDINGS

▲ Calif., Oakland—SCHOOLS—Bd. Educ., Administration Bldg., 1025 2 Ave., bond election June 5, schools. $40,000,000. CD 10/30/45.

▲ Calif., Orangevale—SCHOOLS—Orangevale Union Elementary School Dist., P. O. Box 1, bond election Apr. 3, elementary school, and completing Main Ave. School. $1,100,000.

▲ Calif., San Bernardino—SCHOOLS—San Bernardino Elementary School Dist., San Bernardino, voted $2,900,000 bonds Feb. 21, schools.

▲† Calif., San Francisco—COURT HOUSE and FEDERAL OFFICE—General Services Admin., P. Bldgs. Service, General Services Bldg., Wash., 25; D. C. United States Court House and Federal Office Bldg. $45,300,000 (No appropriation) (Sent to Congress for approval). CD 10/19/45.

▲ Colo., Greeley—DORMITORIES, etc.—Colorado State College of Educ., Campus, Greeley, plans by Robert F. Linstedt, consult. engr. and archt., 625 W. 14 St., Denver, two 3 story dormitories, dining hall addn. $2,750,000. CD 12/14.

▲ Conn., Greenwich—SCHOOL—Bd. Educ. plans by Sherwood, Mills & Smith, 65 Broad St., Stamford, Central Junior High School. $2,000,000. CD 8/12/54.

▲ Conn., New Haven—SCHOOLS—Bd. Educ., City Hall, plans by Schilling & Goldbecker, 18 Trumbull St., two high schools. $6,000,000. CD 10/18/48.

▲ D. C., Wash.—HOUSING—National Capital Housing Auth., 1729 New York Ave. N. W., plans by Leon Brown, Chapman, Baker & Miller, Wire Bldg., 183 dwelling units, Sheridan Rd. and Nichols Ave. S. E., DC-1-31, $1,800,000.

▲ Ind., Bloomington—APARTMENT—Indiana University, Bloomington, plans by Edward D. James, 122 E. Michigan St., Indianapolis, 3 story, masonry, rein. con., steel, married students apartment bldg. $2,500,000.

▲ Md., Frederick—SCHOOL—Bd. Educ., Frederick Co., 115 E. Church St., plans by Hopkins, Pfeiffer & Fenhagen, 10 E. Mulberry St., Baltimore, Zone 2, 1, 2 and 3 story, concrete, steel, masonry school W. Patrick St. and College Terrace. $1,000,000.

▲ Mass., Clinton—SCHOOL—Town, School Dpt., high school, $1,200,000.

▲ Mich., Clawson—SCHOOLS—City, Bd. Educ., 101 John M. St., voted bonds, Mar. 1, schools, $1,250,000. Clair M. Ditchy, 605 West 11-Mile Rd., Royal Oak, archt. CD 1/11.

▲ Mich., East Lansing—STATE UNIVERSITY HOUSING, etc.—State, A. N. Langius, dir. State Bldg., Lewis Cass Bldg., 300 S. Walnut St., Lansing, plans by Ralph Calder, 1212 Kales Bldg., Detroit, Zone 26, self liquidating housing $5,000,000; student service bldg., $2,500,000; intramural bldgs. for men, $2,500,000; intramural bldgs. for women, $1,500,000, all foregoing, Michigan State University.

▲ Minn., Edina (P. O. Minneapolis)—SCHOOL—Bd. Educ., M. S. Richards, clk., voted $1,400,000 bonds, elementary school, east of Doncaster Way and N. of Hy. No. 169. CD 2/9.

▲ Minn., Richfield—SCHOOL—Bd. Educ., H. E. Rumpel, supt. schools, voted $2,175,000 bonds Feb. 28, schools, incl. Junior High School, 70 St. and Elliot Ave. $1,750,000. CD 2/8.

▲ Minn., St. Louis Park—SCHOOL—Bd. Educ., V. S. Formo, clk., voted $1,850,000 bonds Mar. 9, two grade schools, $800,000 each. CD 2/8/56.

▲ Mo., Kansas City—SCHOOLS—Bd. Educ., Library bldg., bond election May 1, schools, $21,000,000. CD 3/6/53.

▲ Mo., Kansas City—LIBRARY—Bd. Educ., Library Bldg., bond election May 1, main library, 2 new branch libraries, remodeling 12 branches, $6,000,000. CD 9/30/54.

▲ N. J., Pennsauken—SCHOOL—Pennsauken Twp. Bd. Educ., Pennsauken, plans by Faint & D'Anastasio, 5521 Westfield Ave., Junior-Senior High School. $5,000,000. John E. Knecht, 904 Park Ave., Collingswood, consult. engr. CD 6/8.

▲ N. Y., Delevan—SCHOOL—Delevan-Machias Central School, Delevan, plans by Duane Lyman & Assoc., 505 Delaware Ave., Buffalo, high school. $1,400,000.

▲ N. Y., Lindenhurst—SCHOOL—Bd. Educ., constr. elementary school north of Sunrise Hy.; elementary school, John St. east of Wellwood Ave., elementary school between Hoffman Ave. and Montauk Hy., $4,000,000.

▲ N. Y., Port Washington—SCHOOL—Bd. Educ., Port Washington, voted $2,000,000 bonds Feb. 29, Morewood Oaks Junior High School, Eggers & Higgins, 100 E. 42 St., New York, Zone 17, archts. CD 1/11.

▲ N. Y., Rochester—GARAGES—City, City Hall, 1,002-car parking ramp garage, Clinton St. north, $2,000,-

(Continued on page 92)

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(Continued from page 90)

000; plans by Bohacket & Flynn and Waasdorp & Northrup, 311 Alexander St., 500-car parking ramp garage between Division and Mortimer Sts. $1,000,000.

▲ **N. Y., Tarrytown**—OFFICE, etc.—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, metropolitan division office, police barracks, and fire station of N. Y. State Thruway Auth., at Broadway and White Plains Tarrytown Rd. $1,000,000.

▲ **N. C., Greensboro**—AUDITORIUM—City, City Hall, defeated bonds Mar. 5, memorial auditorium, $1,900,000.

▲ **N. C., Raleigh**—HOSPITAL—Bd. Comrs. Wake Co., Court House, plans by William Moore Weber, 1918 Hillsboro St., 300-bed hospital. $5,000,000. J. N. Pease & Co., Inc., 119½ E. 5 St., Charlotte, consult. engr. CD 12/19.

▲ **O., Marion**—TRAINING SCHOOL—State Div. Mental Health & Correction, State Office Bldg., S. Front St., Columbus, plans by Ward & Conrad, Hanna Bldg., Cleveland, Zone 15, Marion Correction Institution. $1,400,000. Bids in 2-3 weeks. Harry Allen, c/o owner, state archt. CD 1/12.

▲ **Pa., Beaver**—SCHOOLS—Highland Suburban Joint School Dist., Beaver, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,076,328.

▲ **Pa., Central City-Somerset**—SCHOOLS—Shade Twp. Central City Boro Joint School Dist., Central City and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,161,583.

▲ **Pa., Darby**—SCHOOLS—Darby School Dist., Darby, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools, $1,287,706. CD 12/2/54.

▲ **Pa., Dunbar**—SCHOOLS—Dunbar Twp. School Dist., Dunbar, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,519,884.

▲ **Pa., Ebensburg**—SCHOOLS—Northern Cambria High School Joint School Dist., Ebensburg, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $2,592,000.

▲ **Pa., Farrell**—SCHOOLS—Hickory Twp. School Dist., Farrell, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,681,210.

▲ **Pa., Folsom**—SCHOOLS—Ridley Twp. School Dist., Folsom, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, two schools, $559,634; school, SPSBA Docket 538, $1,048,010. CD 1/10.

▲ **Pa., Freedom**—SCHOOLS—Freedom-New Sewickley Joint School Dist., Freedom, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, school, $1,228,629; school, $379,180. CD 11/1.

▲ **Pa., Harrisburg**—HOSPITAL—Dauphin County Institution Dist., Court House, plans by Lawrie & Green, 321 N. Front St., 150-bed county nursing home facilities, as part of Dauphin County Hospital, $1,300,000.

▲ **Pa., Masontown**—SCHOOLS—Albert Gallatin Joint School Bd., Masontown, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, school, S.P.S.B.A. Docket 513, $452,210; school, S.P.S.B.A. Docket 512, $1,185,921. CD 3/29/49.

▲ **Pa., Montrose**—SCHOOL—Blue Ridge Joint School Bd., Montrose, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, joint school. $1,243,353.

▲ **Pa., Montrose**—SCHOOLS—Mountain View Joint School Dist., Montrose, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,157,254.

▲ **Pa., New Castle**—SCHOOLS—Laurel Joint School Dist., New Castle, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,392,120.

▲ **Pa., New Castle**—SCHOOLS—Shenango Area Joint School Dist., New Castle, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools, $2,174,484.

▲ **Pa., Old Forge (Br. Scranton)**—SCHOOLS—Old Forge School Dist., Old Forge, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, school, Docket 501, $1,508,760; school, Docket 500, $438,480.

▲ **Pa., Parkland**—SCHOOLS—Middletown Twp. School Dist., Parkland, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, school, SPSBA Docket 546, $1,965,600; school, SPSBA Docket 522, $953,856. CD 10/14/54.

▲ **Pa., Phila.**—HOSPITAL—City, Dpt. Procurement, City Hall Annex, rehabilitation of Bldgs. 17, 21, 22 and 15, $350,000, Constr. in 1956-57; nurses home, Northern Division, $500,000, Constr. in 1960; hospital bldg., rehabilitation of existing plant, Northern Division, $5,500,000, Constr. in 1961, Phila. General Hospital. George I. Lovatt, city archt.

▲ **Pa., Portage**—SCHOOLS—Portage Joint School Dist., Portage, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,871,640.

▲ **Pa., Sharpsville**—SCHOOLS—Sharpsville Joint Secondary School Dist., Sharpsville, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $1,301,184. CD 6/24/54.

▲ **Pa., Volant**—SCHOOLS—Neshannock Twp. School Dist., Volant, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, schools. $2,088,200.

▲ **Pa., Washington**—SCHOOL—Bethlehem Joint School Bd., Washington, and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, school. $1,854,636.

▲ **S. D., Rapid City**—AUDITORIUM—City, City Hall, plans by L. A. Daly Co., Insurance Bldg., Omaha, Neb., city auditorium, $1,500,000. CD 5/31.

▲ **Tex., Houston**—CLASSROOMS—University of Houston, 705 Fannin St., plans by Cato & Austin, 2401 La-Branch St., classrooms bldg. $1,000,000. Rob. J. Cummins, Union Natl. Bldg., and Lockwood, Andrews & Newman, Union Natl. Bldg., consult. engrs.

▲ **Tex., Lubbock**—DORMITORIES—Texas Technological College, Lubbock, plans by Schmidt & Stewart, 2109 Avenue Q, Stiles, Roberts & Assocs., 3317 Avenue X, and E. Hoyse McMurtry, 3134 34 St., archts.-engrs., mens dormitories No. 1, $1,150,000; No. 2, $750,000; No. 3, $1,000,000; No. 4 $1,100, 000.

▲ **Tex., Orange**—CIVIC CENTER—City, City Hall, civic center.$1,500,000.

▲ **Tex., Pharr**—HIGH SCHOOL—Pharr-San Juan-Alamo Independent School Dist., c/o Fred Kaderli, supt., Pharr, defeated bonds Feb. 25, high school. $1,530,000.

▲† **Va., Fort Belvoir**—BARRACKS, etc.—U. S. Eng., 1st and Douglas Sts. N.W., Wash. 25, D. C., WAC barracks with mess, $100,000-$500,000; EM barracks w/o mess, Medical Detachment; central tower, Daeson Field, $100,000-$500,000; EM barracks with mess, $1,000,000-$3,000,000; test loop, $100,000-$500,000; water and sewerage sys., $100,000-$500,000; commissary, $100,000-$500,000. CD 10/4/51.

▲ **Wash., Puyallup**—SCHOOL—School Bldg., Puyallup, plans by R. B. Price, 2907 A St., Tacoma, Junior High School, $1,800,000.

▲ **North West Territories, Aklavick**—TOWNSITE—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., plans by Rule, Wynn & Rule, 11422 Jasper Ave., Edmonton, Alta., and Renssa & Minos, 9130 Jasper Ave., Edmonton, Alta., new townsite, incl. 30-bed hospital, school, hostels, rehabilitation center, federal bldg., etc. 30-mi. east of present town. $7,000,000. CD 2/22.

▲ **Ont., Brampton**—HOSPITAL—Peel Memorial Hospital Assn., c/o C. V. Charters, Henderson St., plans by John B. Parkin Assocs., 1509 Don Mills Rd., Potsal Station "U", Toronto, 120-bed hospital expansion, $1,000,000-$2,000,000.

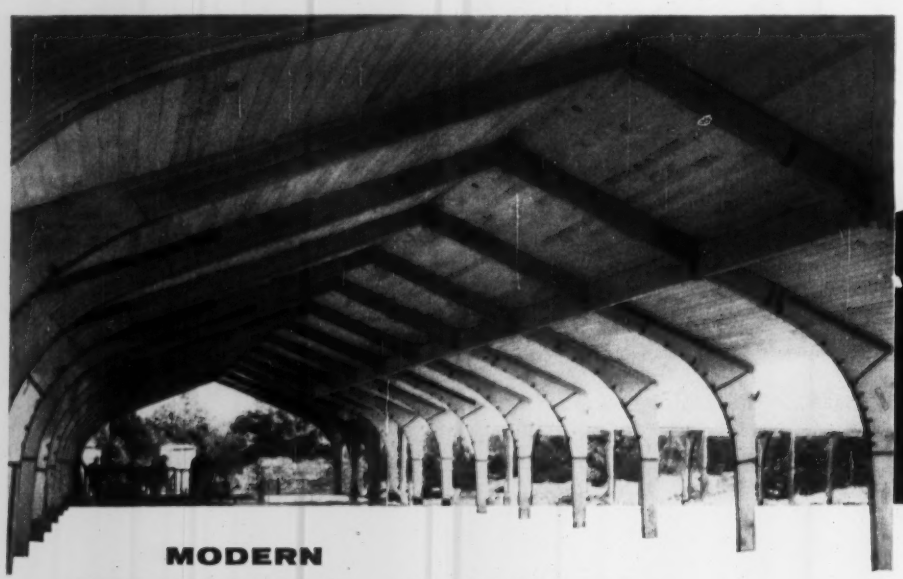
▲ **Ont., Cobourg**—FEDERAL—Dpt. P. Wks., Hunter Bldg., Ottawa, federal bldg. $1,000,000.

▲ **Que., Montreal**—POLICE TRAINING SCHOOL—City, City Hall, plans by Paul Lambert, 4050 Trafalgar Rd., police training school with indoor swimming pool. $2,000,000. Lucien L'Allier, c/o owner, ch. engr. CD 10/4.

COMMERCIAL BUILDINGS

▲ **Calif., Concord**—COMMUNITY HOSPITAL—Owner c/o Confer & Willis, archts., 366 40 St. Oakland, 4 story Concord Community Hospital addn. $1,250,000.

(Continued on page 94)



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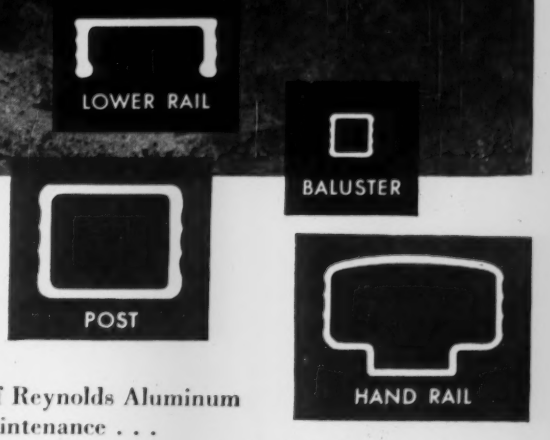

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Dept. E, Scranton 2, Penna.

(Continued from page 92)

▲ **Conn., Middletown**—SCHOOL—Long Lane School, Long Lane, cottage-type Correctional Institution for Girls. $1,500,000.

▲ **Conn., Tarriffville**—HOUSING—I. R. Stich Associates, Inc., 611 New Park Ave., West Hartford, 70-house development, Simsbury Heights. $1,120,000. Francis P. Molloy, 10 N. Main St., West Hartford, consult. engr.

▲ **Conn., West Hartford**—HOUSING—Brownleigh Acres, Simsbury Rd., 100-home development, $2,150,000.

▲ **Conn., West Hartford**—HOUSING—I. R. Stich Associates, Inc., 611 New Park Ave., plans by Elroy Webber, 57 Pearl St., Springfield, Mass., 80-house development. $1,600,000. Francis P. Molloy, 10 N. Main St., West Hartford, consult. engr.

▲ **D. C., Wash.**—HOSPITAL—Greater Southeast Community Hospital Foundation, Inc., c/o Raymond J. McDonough, Ring Bldg., 250-bed hospital, S.E. Washington, $6,000,000.

▲ **Ill., Chicago**—HOSPITAL—Illinois Masonic Hospital, 834 Wellington Ave., plans by Schmidt, Garden & Erikson, 104 S. Michigan Ave., Zone 3, 3 hospital addns. $4,000,000.

▲ **Iowa, Mason City**—SHOPPING CENTER—Sears Mason City Shopping Center, c/o Phillip Levit, Realtor, 120 S. La Salle St., Chicago 3, Ill., plans by Sidney H. Morris & Assocs., 134 N. La Salle St., Chicago, Ill., shopping center and parking space. $1,000,000. Sears, Roebuck & Co., S. S. Kresge, Piggly-Wiggly Food Mart, etc. lessees. CD 11/17.

▲ **Md., Baltimore**—SYNAGOGUE CENTER—Beth El Congregation, Hilton St. and Dorithian Rd., Synagogue Center, incl. central sanctuary, community hall, 2 story educational bldg., classrooms, 8½ acre site, Western Run Dr. and Taney Rd. $1,500,000.

▲ **Mass., Brookline**—APARTMENT—Owner, c/o Maurice Reubens & Assoc., Inc., 1674 Beacon St., Brookline, co-operative apartment, 172 units, 1600 Beacon St., $2,400,000.

▲ **N. J., Fort Lee**—APARTMENT—Washington Crest Apartments, c/o Max Simon, archt., 1841 Broadway, New York 23, N. Y., apartment project of eight 14 story buildings, incl. 1,300 families on 32-acre tract one mile south of George Washington Bridge. $12,000,000. To go ahead in Spring 1957.

▲ **N. J., Somerville**—HOMES—Glendale Gardens Corp., Somerville, 159 homes, North Gaston Ave. and Rte. 22. $1,000,000.

▲ **N. J., Yardville**—RESIDENTIAL DEVELOPMENT—Brando Estates Corp., Yardville, residential development, Sunny Brae Village, $2,000,000.

▲ **N. Y., New York**—HOUSES—Gross Brothers Corp., 380 Madison Ave., New York, plans by Paul Resnick, 654 Madison Ave., Zone 21, two apartment houses on site bounded by East River, E. 54 St., E. 56 St. and Sutton Place South, $1,000,000.

▲ **O., Cleveland**—HOSPITAL—Euclid Glenville Hospital, 101 E. 185 St., Zone 19, plans by Conrad & Simpson, Hanna Bldg., Zone 15, 3 story hospital addn $1,000,000.

▲ **Okla., Ardmore**—HOUSING—Procurement & Contg., 4630 Troop Carrier Wing (M), Ardmore Air Force Base, Ardmore, plans by Hudgins, Thompson, Ball & Assocs., 1411 Classen Blvd., Oklahoma City, construct and finance, 750 family housing units, Ardmore Air Force Base. $5,400,000. Bids about July. CD 8/30., under Airports.

▲ **Pa., Abington**—HOSPITAL, etc.—Daughters of the Holy Redeemer, St. Joseph's Manor, Meadowbrook, plans by George E. Ajundt, 16 S. Sixth St., Allentown, hospital, chapel, parking area. $2,000,000.

▲ **Pa., Bryn Mawr**—APARTMENT—John A. Scott, 648 Drexel Ave., Drexel Hill, plans by Fredrick Wise, Ellis Rd., Havertown, 380 unit apartment. $2,500,000. Over & Tingley, Darby Rd., Havertown, engrs. CD 6/24.

▲ **Pa., Phila.**—MUSIC HALL—Academy of Music, Broad and Locust Sts., modernizing music hall, $1,000,000.

▲ **Pa., Phila.**—APARTMENT—Carl Metz, 7917 Ogontz Ave., apartment Greene and Johnson Sts. $1,000,000.

▲ **Tex., Amarillo**—OFFICE—Diversified, Inc., 500 Monroe St., plans by John Hannon, Amarillo Bldg., 6 story penthouse, steel frame office, 45 and Western Sts. $1,200,000.

▲ **Tex., Lubbock**—APARTMENT—Mohler D. Temple, 2422 15th St., plans by Butler-Kimmel Co., 412 Aveune M, 7 story steel apartment, 2-level parking bsmnt. 15th at College St. $1,000,000.

▲ **Tex., Midland**—BANK AND OFFICE—First National Bank, Main and Wall Sts., plans by Geo. L. Dahl, archt.-consult. engr., 2101 N. St. Paul St., Dallas, 95,000 sq. ft. masonry bank and office. $1,000,000.

▲ **Va., Norfolk**—SHOPPING CENTER—Janaf, Inc., 1012 14th St. N.W., Wash. 5, D. C., plans by Lublin, McGaughy & Assocs., archts.-engrs., 220 W. Freemason St., 1 and 2 story, approx. 400,000 sq. ft. steel, masonry shopping center, air-conditioned. $5,000,000.

▲ **Ont., Toronto**—OFFICE—First Holdings Ltd., 336-344 Bay St., 20 story, masonry, rein.-con. steel office, Bay St. north of Adelaide St. $1,500,000.

▲ **Ont., Toronto**—APARTMENTS—Owner, c/o Bregman & Hamann, archts., 7 Adelaide St. E., apartment bldgs., incl. 700 suites, Jarvis and Isabella Sts. $6,000,000.

▲ **Que., Montreal**—HOUSING—S. D. Gameroff, 1069 Notre Dame St., Lachine, 50 duplex housing development. $1,150,000.

INDUSTRIAL BUILDINGS

▲ **Calif., San Leandro**—FACTORY—Continental Can Co., Russ Bldg., Montgomery St., San Francisco, factory expansion. $3,000,000.

▲ **Calif., Wilmington**—PLANT—Brea Chemical, Inc., (sub Union Oil Co.), 714 W. Olympic Blvd., Los Angeles, plant to mfg. ethylene from refinery gas at Wilmington Ave. and Sepulveda Blvd. $5,000,000. Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa., consult. engr.

▲ **Conn., Manchester**—FACTORY—Green Manor Estates, 681 Parker St., factory. $8,000,000. United Aircraft, lessee.

▲ **Ill., Berwyn**—FREIGHT HOUSE—Chicago, Burlington & Quincy R. R., E. J. Brown, ch. engr., 547 W. Jackson Blvd., Chicago, Zone 6, 1 and 2 story, 70,000 sq. ft. brick, stone freight house. $1,500,000.

▲ **Iowa, Des Moines**—PARKING—Thompson Trust Co. & Hubbell Realty Co., 206 Hubbell Bldg., plans by National Garages, Inc., 1009 Cass St., Detroit, Mich., 4 story parking, 10 and Walnut Sts. $1,000,000.

▲ **Mich., Plymouth**—PLANT—Burroughs Corp., 6071 Second St., Detroit 32, 1 story, 204,000 sq. ft. plant addn., to mfg. business machines. $2,000,000.

▲ **Mo., Louisiana**—PLANT—Hercules Powder Co., Delaware Trust Bldg., Wilmington, Del., plant. $2,000,000.

▲ **Neb., Millard**—PLANT—Western Electric Co., Inc., 195 Broadway, New York, N. Y., manufacturing plant. $50,000,000.

▲ **N. J., Fords**—PLANT—Heyden Chemical Corp., 342 Madison Ave., New York 17, N. Y., pentaerythrotol plant. $1,000,000.

▲ **O., Barberton**—PLANT—Ohio Brass Co., 380 N. Main St., Mansfield, plant. $1,000,000.

▲ **O., Mansfield**—FOUNDRY—Ohio Brass Co., 380 N. Main St., foundry expansion and new bldg. $1,250,000.

▲ **O., Portsmouth**—PLANT—Detroit Steel Corp., 1025 S. Oakwood St., Detroit, Mich., plant expansion at Portsmouth Steel Works, incl.: sintering plant for concentrating blast furnace ore and reclaiming flue dust; one addnl. 275 ton open hearth furnace for No. 2 open hearth shop; addnl. soaking pits; automatic scarfing equip.; two addnl. stands and an addnl. coiler for hot rolled sheet and strip mill; addnl. finishing facilities for cold rolled sheet and strip mill. $20,000,000.

▲ **O., Warren**—ASSEMBLY PLANT—Chevrolet Div. General Motors Corp., 3044 W. Grand Blvd., Detroit, Mich. plans by Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich. 1 and 2 story, 2,500,000 sq. ft. assembly plant, at Lordstown, 6 mi. southwest of here. $30,000,000.

▲ **Pa., Phila.**—PARKING GARAGE—Owner, c/o Wallace & Warner, engrs.-archts., Bryn Mawr, underground parking garage under former site of Broad St. R.R. Station. $1,500,000.

▲ **Tex., Houston**—PLANT, etc.—Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, O., perchlorethylene plant, incl. office, laboratory and dock facilities, $3,000,000. CD 11/18/48.

▲ **Tex., Port Neches**—PLANT—Neches Butane Products Co., Port Neches, plant expansion. $16,000,000.

▲ **Wash., Seattle**—WAREHOUSE FACILITIES—Boeing Airplane Co., 7755 E. Marginal Way, Zone 4, addnl. warehouse facilities, $3,000,000. Work in 1957-58.

▲ **Wis., Milwaukee**—FACTORY—Cutler-Hammer, Inc., 315 N. 12 St., plans by Eschweiler & Eschweiler, 720 E. Mason St., 175,000 sq. ft. factory, 2nd story, 7,000 sq. ft. to office, $2,000,000.

▲ **Wyo., Riverton**—PLANT—Lost Creek Oil & Uranium Co., Rawlins, uranium ore processing plant, 80-acre tract. $3,000,000.

▲ **Ont., Hamilton**—PLANT—Dominion Tar & Chemical Co. Ltd., Sun Life Bldg., Montreal, Que., distilled tar production plant. $2,000,000. W. D. Adkin, c/o owner, ch. engr.

▲ **Ont., Leamington**—WAREHOUSE, etc.—H. J. Heinz & Co. of Canada Ltd., Erie St. S., warehouse and office. $5,000,000. C. A. Hahn, c/o owner, consult. engr.

▲ **Que., Quebec City**—PRESS—Le Soleil, 1 rue de la Couronne, Quebec City, plans by Andre Gilbert, 915 St. Cyrille St., 4 story bldg. to house new press. $1,000,000.

UNCLASSIFIED

▲† **California**—PARK IMPRVS.—National Park Service, Dpt. Interior, 19 and C Sts. N.W., Wash. 25, D. C., utilities $74,100; imprvs., expansion sewage disposal plant $165,000; camp ground development $75,000; incinerator, outside valley $125,000; CD 7/19 reconstr. approx. 8 mi. portion of Tioga Rd., $1,299,700, Yosemite National Park. CD 7/19.

▲ **California**—NATURAL GAS PIPE LINE—Pacific Gas & Electric Co., 245 Market St., San Francisco, 83 mi. natural gas pipe line from Glenn Co. area into Sacramento Region. $5,250,000.

▲ **Florida**—PARK ROADS—National Park Service, Dpt. Interior, 19 and C Sts. Wash. 25, D. C. 5 mi. park highway and approx. 2 mi. Paradise Key Rd., Everglades National Park, $1,678,800.

▲ **Oregon**—RURAL DISTRIBUTION LINES—Harney Electric Co-operative, Burns, 402 mi. rural distr. lines, Harney Co. $1,110,000. Robert Weity, The Dalles, consult. engr.

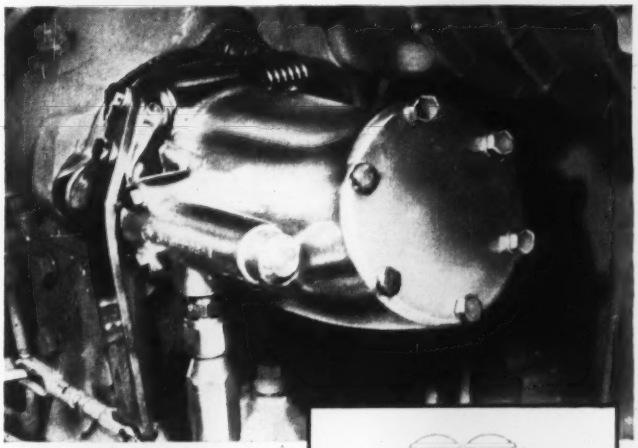
▲ **Pennsylvania**—TUNNEL—Pennsylvania Tunnel Comm., Harrisburg, 3,600 lin. ft. Fort Pitt Tunnel, Penn Lincoln Parkway. $20,000,000-$25,000,000. Bids in August. CD 12/13/43, under Streets and Roads.

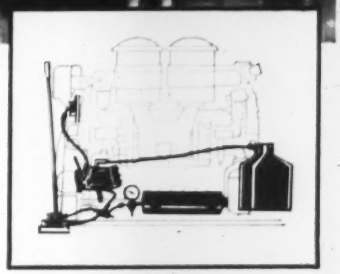
It takes a power shovel

half a second to dump a bucket

But a Hydrostarter starts a GM Detroit Diesel in

One-Third the Time





Heart of the Hydrostarter is this hydraulic starting motor. Other components are an engine-driven pump, accumulator, emergency hand pump and reservoir.

15/100 of a second. That's the split-second it takes a Hydrostarter to start a General Motors Detroit Diesel. And a Hydrostarter cuts your operating costs—costs less to maintain even than regular starting systems. In a recent 26-day test one Hydrostarter started a GM Detroit Diesel 26,788 times. For sure, fast starts even at 20° below zero, specify a Hydrostarter on your next GM Detroit Diesel—or have one installed on your present engine. For more information call your GM Detroit Diesel distributor, dealer or write direct.

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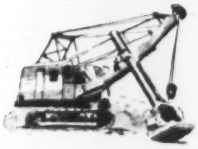


AMERICA'S LARGEST BUILDER OF DIESEL ENGINES

Note the stringers of Stoody 21 which act as "buffers" between abrasive earth and bucket sides. Inside surfaces of bucket receive similar protection.

All Buckets Take a Beating... Here's the Medicine!

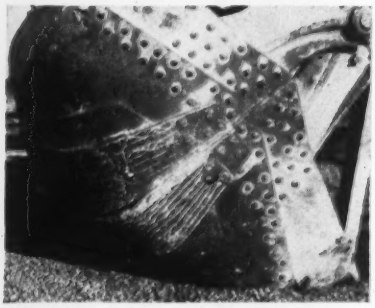
We're often asked about bucket maintenance, what hard-facing material to use and how to use it for maximum wear protection. Actually, your own equipment gives you part of the answer. Each bucket wears differently, depending upon how it is used and the kind of material handled. By watching for development of wear patterns, then hard-facing these areas at definite intervals, you'll get extended service with greatest economy. *Remember, a frequent touch-up is better than a major repair*...more economical in hard-metal and less costly in down time.

If buckets are severely worn, first build up with Stoody Manganese. For hard-facing, the alloy most commonly used is Stoody 21, preferred because of good wear resistance, fast deposition rate and low price. Occasionally, under conditions of excessive abrasion, Coated Tube Stoodite gives longer life on shovel teeth and reduces maintenance costs.

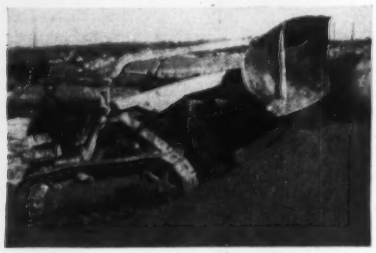
Full particulars on alloy recommendations and hard-facing procedures are in the Stoody HARD-FACING GUIDEBOOK. Ask your dealer for a copy (check the "yellow pages" of your phone book) or write direct.

Bucket teeth (top illustration) and adapters (above) are amply coated with Stoody 21. Hard-faced teeth on this job averaged two full shifts of extra service before needing additional hard-facing treatment.

These Stoody 21 beads across the bucket resist severe abrasion as it is dragged across rubble, returning for a new bite.



Lips on this clam shell are kept in good shape for a tight seal with Stoody 21.



Scoop lifts often lead a tough life. Here, lips, sides and bottoms are kept in good condition with Stoody 21. Occasional touch-ups are made as wear occurs.

STOODY COMPANY 11976 East Slauson Avenue, Whittier, California

See the Stoody Exhibit — Welding Show, Buffalo, N. Y. May 9-11

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

March 26 Connecticut March 27 Massachusetts

BUILDINGS—BA

▲ **Conn., Bridgeport**—HOSPITAL—BA 4/4—Bridgeport Hospital, James M. Dunlap, admin., Grant St., hospital, Grant St. $2,000,000. Charles Wellington Walker, 114 State St., archt. CD 4/2/54.

BUILDINGS—LB & CA

▲ **F. Grande & Son, Inc.**, 175 Maplewood St., Malden, Mass. LB $2,051,881. King Philip Reginal High SCHOOL, WRENTHAM, MASS. Towns of Wrentham, Norfolk and Plainville, King Philip Regional School Dist., Selectmen's Office, Municipal Bldg., Wrentham, Mass. Bids Mar. 9. CD 2/28.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 28 New York April 6 Pennsylvania

STREETS AND ROADS

March 28 New York April 6 Pennsylvania

▲† **N. Y., Syracuse**—MISC. BLDGS.—BA On Or About 4/17—U. S. Eng., 111 E. 16 St., New York, Zone 3, misc. bldgs. at Hancock Field, $1,000,000-$3,000,000. Cowell-Robinson, 25 W. 43 St., New York, Zone 36; archts.

HEAVY CONSTRUCTION—LB & CA

▲ **Charles F. Vachris, Inc.**, 9024 Ditmas Ave., Brooklyn 36, N. Y. CA $2,618,000, est. $3,110,600. (11 bidders) grading, paving, constr. grade separation structures, retaining walls, curbs, walls, malls, drainage facilities, electrical sys., Brooklyn-Queens Expressway (connecting hy.) from 38 to Woodside Aves. with adjoining sects. of intersecting streets, Queens Boro, NEW YORK. President Queens Boro, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. CD 1/27, under LB.

▲ **J. Rich Steers Co.**, 17 Battery Place, New York 4, N. Y. CA $3,250,000. (1 bidder) Contr. 877, constr. site in Hudson River upon which site will be constr. Yonkers Sewage treatment plant, incl. site constr., wharf, outfall drainage and appurtenant work located in city of Yonkers, WHITE PLAINS, N. Y., Westchester Co., County Office Bldg., White Plains, N. Y. CD 2/3, under LB.

▲ **NEW JERSEY**—N. J. Hy. Auth., Boro Hall, 51 Monmouth St., Red Bank,

Reid Contg. Co., Inc., 23 Main St., Woodbridge, N. J., LB $2,632,675. Alternate A, using steel for bridges LB $2,529,198. Alternate B using pre-stressed concrete for bridges; Contract 206, grading, paving bridges of Garden State Parkway 4.25 mi. Washington Twp. and Paramus, Bergen Co. Bids Mar. 8. CD 2/13.

▲ **Sheehan Pipe Line Constr. Co.**, Natl. Bank of Tulsa Bldg., Tulsa, Okla. CA, 90 mi. 14 in. seamless steel petroleum products pipe line 7 mi. Twin Oaks Pa. to Plainfield, N. J., PENNSYLVANIA and NEW JERSEY. Total est. $5,000,000. Sun Pipe Line Co. (Sun Oil) 1608 Walnut St., Phila., Pa.;

Delaney-Missouri Valley Constr. Co., Waterworks Rd., Freehold, N. J. CA, 90 mi. petroleum products line from Plainfield to Newark, N. J. (Pennsylvania and New Jersey);

Missouri Valley Dredging Co., 222 William St., Omaha, Neb. CA 3 major river crossings at Schuylkill, Delaware and Raritan Rivers (Pennsylvania and New Jersey)

BUILDINGS—LB & CA

▲ **Harry Shender**, 2001 Shelmire Ave., Phila., Pa. Separate Contracts. $3,700,000. RESIDENTIAL DEVELOPMENT, Marlton Pike area, ERLTON, N. J. Lester H. Weckesser, Erlton, N. J., archt.

▲ **Laurelton Acres**, Lakewood, N. J. Separate Contracts. $2,000,000. RESIDENTIAL DEVELOPMENT, Chambers Bridge Rd., etc. LAURELTON, N. J. Robert B. Myers, Sea Girt, N. J., archt.

▲ **Frank Adamucci**, 8 S. Gladstone Ave., Margate, N. J. Separate Contracts. $2,550,000. RESIDENTIAL DEVELOPMENT, PINE HILL, N. J.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York 6, N. Y. CA $11,000,000. two steam generators for Overpeck Creek Power Station, RIDGEFIELD, N. J. Public Service Electric & Gas Co., 80 Park Pl., Newark, N. J. CD 1/17/56, under CA.

▲ **Kaiser Engineers**, 1924 Broadway, Oakland, Calif. CA design and construct, OXYGEN CONVERTER PROCESS to increase 300,000 tons per year steel production, ALQUIPPA, PA. Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh, Pa.

▲ **Robert E. Lamb & Son**, 3429 Indiana Ave., Phila., Pa. Owner Builds. $2,500,000. 1 story, steel, masonry, 15,400 sq. ft. MANUFACTURING BLDG., OAKS, PA. Alan Wood Steel Co., lessee.

Procon, Inc., Des Plaines, Ill. CA CATALYTIC REFORMING UNIT to produce high octane gasoline, PHILA., PA. Total est. cost $35,000,000. Gulf Oil Corp., 30 St. and Penrose Ave., Phila., Pa. Universal Oil Products Co., Des Plaines, Ill., engr. To be completed by mid-1957;

Ralph M. Parsons Co., 617 S. Olive St., Los Angeles, Calif. CA ALKYLATION UNIT to produce high quality octane blending stock (Phila., Pa.);

Catalytic Constr. Co., 1528 Walnut St., Phila., Pa. CA VISBREAKING UNIT (Phila., Pa.);

M. W. Kellogg Co., 225 Broadway, New York, N. Y. CA two GULFINING UNITS to remove sulphur from heating oils (Phila., Pa.).

▲ **Vivian, Inc.**, P. O. Box 1569, Wilmington, Del. Separate Contracts. $3,000,000. RESIDENTIAL DEVELOPMENT, Harvey Rd., CLAYMONT, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 27 North Carolina, West Virginia

March 30 Mississippi

STREETS AND ROADS

March 27 North Carolina April 18 Louisiana

BUILDINGS—LB & CA

▲ **Eugene Simpson & Bro.**, 300 Montgomery Ave., Alexandria, Va., LB $2,247,000. O'Connell HIGH SCHOOL, ARLINGTON, VA. R. C. Diocese of Richmond, 101 N. Thomas St., Arlington, Va. Bids Mar. 1. CD 2/2.

▲ **Chris. Larsen Co.**, 915 Maritime Bldg., New Orleans, La. CA $3,936,847. 8 story OFFICE, NEW ORLEANS, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Feb. 28, awarded Mar. 8. CD 3/2, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 3 Ohio

STREETS AND ROADS

April 3 Ohio

BUILDINGS—LB & CA

▲ **F. H. McGraw & Co.**, 51 E. 42 St., New York, N. Y. Co. Total Est. $90,000,000. design and construct ALUMINA PLANT, REDUCTION PLANT, ROLLING MILL, near CLARINGTON, O. Olin-Mathieson Chemical Corp., 460 Park Ave., New York, N. Y. Purdy & Henderson Assocs., Inc., 1 Madison Ave., New York 10, N. Y., consultants on structural work. Kennedy-Van Saun Mfg. & Eng. Corp., 2 Park Ave., New York, N. Y., engineers on special processes. Singmaster & Breyer, 420 Lexington Ave., New York 17, N. Y., consult. engrs. on reduction plant. Arthur G. McKee, 2300 Chester Ave. N., Cleveland 1, O., consult. engr. on rolling mill. CD 1/24.

▲ **L. C. Homes, Inc.**, Atlas Bank Bldg., Cincinnati, O. Own Forces. $2,250,000, 250 one-story frame, prefabricated HOMES, Lawrenceburg and Campbell Rds., HARRISON, O. James Wald & Assoc. 2565 Galbraith St., Cincinnati, O. engrs. Awarded Mar. 9.

▲ **Buttler-Stewart Builders**, 180 N. Roosevelt Ave., Columbus, O. Owner Builds. $5,000,000, three hundred twenty-five 1½ story, bsmnt. HOMES, to be known as Westerville Estates, WESTERVILLE, O.

▲ **Paul Schleicher**, 541 Washington St., Gary, Ind., CA, $2,600,000. 48 HOMES, paving, sewers and water line, CHICAGO HEIGHTS, ILL. Eastgate Homes, Inc., c/o Mulford Eng. Service, 50 W. 16 St., Chicago Heights, Ill.

▲ **General Electric Co.**, River Rd., Schenectady, N. Y. CA Unit No. 5, 325,000 kw TURBINE-GENERATOR UNIT at St. Clair Power Plant, MICHIGAN. Total Est. $10,000,000. Detroit Edison Co., 2000 Second Ave., Detroit 26, Mich. Plant to go into operation late 1958. CD 12/9;

Allis-Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis. CA condenser (Michigan).

Babcock & Wilcox Co., 161 E. 42 St., New York, N. Y. CA boiler (Michigan).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 29 Kansas, Missouri

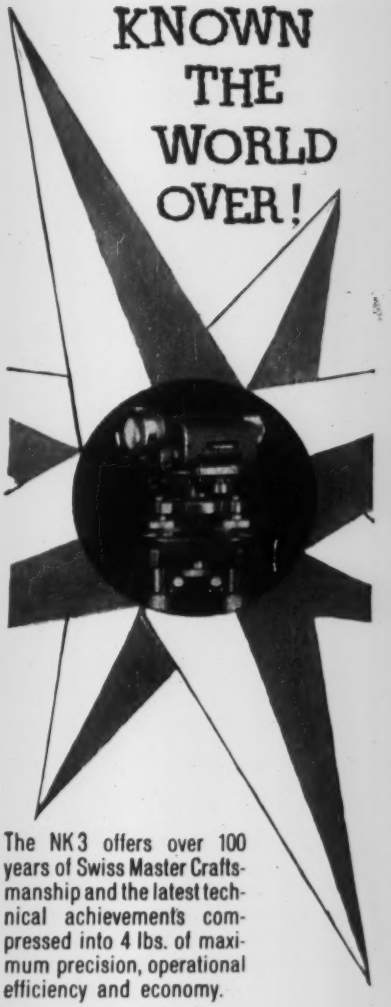
STREETS AND ROADS

March 29 Kansas, Missouri

BUILDINGS—BA

▲ **Minn., Minneapolis**—HEALTH CENTER—BA 4/10—City, G. R. Arneson, city purch. agt., 301 City Hall, 5 story, bsmnt., 75x240 ft., public health center, 4th St. and 3rd Ave. South. $2,400,000. Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, archts. CD 4/15/54.

KNOWN THE WORLD OVER!



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NEW LOW LIST PRICE
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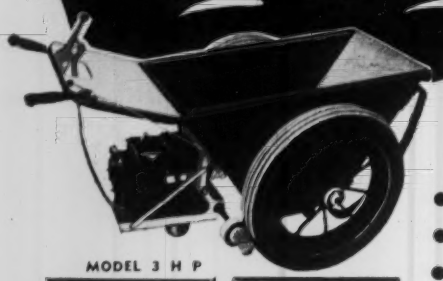

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- PERFECTLY BALANCED—EASY TIPPING
- PNEUMATIC TIRED WHEELS with ROLLER BEARINGS and ZERK FITTINGS

Here's the ideal *motorized* concrete cart. Economically priced, yet ruggedly constructed for handling any material anywhere. Only one operator needed for hauling full loads up ramps or through mud. Powered by Briggs and Stratton engine with hand-operated clutch and finger tip throttle control for easy operation. Cart has drop axle, rear swivel wheel, and convenient ROCKER DUMP feature . . . will not rock back on operator. Built to last and last!

SPECIFICATIONS:
Heaped Capacity—8 cu. ft.
Length 63", Width 37", Height 27"
Shipping Weight 300 lbs.
(Pat. Pend.)

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ESHELMAN COMPANY
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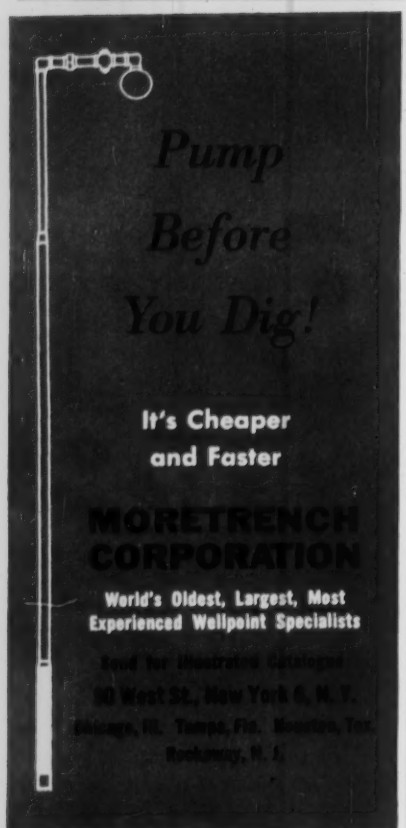

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LARGE SIZE STEEL PIPE & FITTINGS FABRICATED TO ORDER

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BINS—CHUTES—HOPPERS
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WIDE-RANGE LINE OF
PILE HAMMERS AND EXTRACTORS

Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.

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Also builders of coal and ore bridges and unloaders, and specially designed machinery.

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32 Mercer Street, Dover, N. J.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ Washington—GAS PIPE LINE—BA. After 3/24—Washington Natural Gas Co., Gasco Bldg., Seattle, Zone 1, 19 mi. 20- to 4½-in. welded steel pipe line, coated and wrapped, for supply line from point near Dieringer to Tacoma; over $1,000,000; installing 25 mi. -20- to 4½-in. welded steel pipe, coated and wrapped, for supply lines from point near Renton to Georgetown pumping station and from point near Issaquah to serve communities east of Lake Wash., over $1,000,000; installing 26 mi. 20- to 4½-in. welded steel pipe, coated and wrapped, for supply lines from point near Alderwood Manor to North Seattle and Everett sys., over $1,000,000. CD 1/17.

BUILDINGS—BA

▲ Calif., Los Angeles—STEAM PLANT—BA 4/4—Los Angeles City Bd. P. Wks., 153 City Hall, excavate steam plant site, imprv. Vista Del Mar and Coast Blvd., constr. groins, tunnels and storm drain. $2,000,000. L. A. Pardee, c/o owner, engr. CD 4/30/54.

HEAVY CONSTRUCTION—LB & CA

▲ Morrison-Knudsen Co., 319 Broadway Boise, Idaho, CA Total est. $45,000,000. fill work for replacing trestle over Great Salt Lake, UTAH. Southern Pacific R.R. Co., W. M. Jaekle, ch. engr. 65 Market St., San Francisco 5, Calif.

▲ Merritt-Chapman & Scott Corp., 260 Madison Ave., New York, N. Y., LB $91,878,625, total est. $120,000,000. (5 bidders) rein.-con. earthfill dam about 8,000 ft. long across Columbia River at Priest Rapids near Richland to develop 79 ft., head and 600,000 kw., WASHINGTON. Grant County Public Utility Dist., Ephrata, Wash. Bids Mar. 12. CD 2/15.

BUILDINGS—LB & CA

▲ Hilp & Rhodes, 918 Harrison St., San Francisco, Calif., CA Est. $2,000,000. 2 story 202,000 sq. ft. rein.-con., brick STORE, Rosemead and Foothill Blvd., parking for 2,100 cars, PASADENA, CALIF. Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill., Stiles Clements & Robert Clements, 210 W. 7th St., Los Angeles, Calif., archts.

▲ Dinwiddie Constr. Co., Crocker Bldg., San Francisco, Calif. CA, $3,960,000. MARKET BLDG., Macy's Department STORE, and TENANT BLDGS. (first unit) SAN LEANDRO, CALIF. Bayfair Shopping Center, c/o Victor Gruen & Assocs., 971 Sutter St., San Francisco, Calif. Bids Jan. 15. CD 1/10.

CANADA

BUILDINGS—BA

▲ Ont., Hamilton—HOUSING—BA 3/27—Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, relocation, renovation of 100 houses, Mohawk Gardens, $2,600,000. Plans deposit $100. F. J. Stricker, c/o owner, engr. CD 12/8/53.

HEAVY CONSTRUCTION—LB & CA

▲† Grove, Shepherd, Wilson & Kruge, Inc., Angus Robertson, Ltd. & T. D. K. Rowney, 400 Madison Ave., New York 17, N. Y. CA $10,479,717. addnl. naval facilities, FY-55-56, U. S. Naval Station, NOY 89833, Spec. 46820, 49622, 49625 and 49627, ARGENTIA, NEWFOUNDLAND. Director Atlantic Div. Bureau Yards & Docks, 90 Church St., New York, N. Y. Bids Feb. 23. CD 2/28, under LB.

ALASKA

BUILDINGS—LB & CA

▲† Raber & Kief, 420 Queen Ave., Seattle, Wash., LB $3,440,000. (3 bidders) family HOUSING and direction finder facilities, Spec. 37595 and 37596, ADAK, ALASKA. P. Wks. Officer, 17th Naval Dist., Kodiak, Alaska. Bids Mar. 8. CD 1/26.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲† GUATEMALA—BA 4/5—Bureau P. Rds., Dpt. Commerce, Inter-American Hy., 18 and F Sts. N. W., Wash. 25, D. C., U. S. A.
Proj. 24—grading, minor drainage structures 4½ mi., from Km. 59 to 66 Guatemala-Salvador-Guilapa.
Proj. 25—grading, minor drainage structures, 7½ mi. from Km. 135 to 147 Guatemala-Salvador-Asuncion Mita. CD 8/5.

HEAVY CONSTRUCTION—LB & CA

▲† COSTA RICA—Bureau P. Rds., Dpt. Commerce-Inter-American Highway Office, 18 and F Sts. N. W., Wash., D. C., U.S.A.,
Empressa Constructora Rafael Herrera, Ltd. and Louis R. Sommer, Box 1408, San Jose, Costa Rica, CA $4,347,476, grading, drainage, crushed gravel or stone surf., bit. surf., 28 bridges, etc. at San Ramon, Proj. 75-56-3A and 75-56-3B. Bids Dec. 15. CD 12/21, under LB.

BUILDINGS—LB & CA

▲ Utah Constr. Co., 144 E. Broadway, Salt Lake City, Utah, U.S.A. and Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, U.S.A. CA $80,000,000, erect POWER PLANT, concentrators and laying railroad at Toquepala, PERU. Southern Peru Copper Co. (American Smelting & Refining Co., Phelps-Dodge, Newmont Mining Corp., Cerro de Pasco Corp.), 120 Broadway, New York, N. Y., U.S.A.

(Proposal Advertisements see p. 115 to 117)

CLINTON WELDED WIRE FABRIC ... IN FAMOUS STRUCTURES EVERYWHERE

SAN FRANCISCO AUDITORIUM

beautifully built then...a beautiful building still

The famed San Francisco Auditorium, a magnificent structure when it was built almost 50 years ago, is still an imposing edifice today.

Much credit for such agelessness can be given to the Clinton Welded Wire Fabric used in the construction of the floors and for beam and column wrapping.

Over the years, Clinton Welded Wire Fabric has achieved an outstanding reputation for the contributions it makes to the durability of reinforced concrete structures.

Made by CF&I, Clinton Welded Wire Fabric is fabricated from our own steel wire, cold drawn and electrically welded in our own plants, under CF&I's highest standards of quality control. Because of its quality, this fabric has gained the approval of contractors, designers, engineers, builders, owners—of hospitals, hotels, municipal buildings, factories, highways, etc.—everywhere.

Past performance proves . . . you can count on Clinton Welded Wire Fabric to provide maximum strength with minimum cracking on all your reinforced concrete projects. Consider using Clinton Welded Wire Fabric on your next job. Get full details on this fabric's advantages . . . consult our nearest sales office. Or write today.

WHEN THEY ASK . . .

"is it Reinforced"

SAY YES . . . WITH

3561

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Pier designed by Fay, Spofford & Thorndike for the Port of Boston Commission

Raymond COMPLETES NEW SHIP TERMINAL

4 MONTHS AHEAD OF SCHEDULE

THE PORT OF BOSTON gained 4 months unexpected revenue when Raymond completed the East Boston Pier No. 1 in December instead of the following March, as originally scheduled. Among the outstanding features of this project is the approximately 200,000 square feet of unobstructed warehouse space . . . and the latest facilities for transferring cargo directly from ship to train or truck. This mammoth terminal graphically illustrates how Raymond's specialized experience in the complete construction of marine and waterfront structures produces results--in a hurry. Write today for information on how Raymond can serve you.

RAYMOND'S DOMESTIC ACTIVITIES
Foundations . . . Marine structures and Off-shore Construction . . . Heavy Construction . . . Soil Investigation

RAYMOND'S ACTIVITIES ABROAD
Complete service for all types of construction.

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CONCRETE PILE CO.

BRANCH OFFICES
in principal cities of the United States, Canada, Central and South America

140 CEDAR STREET • NEW YORK 6, N. Y.

New Bids on Massachusetts Bridge Cut Costs 44%

By taking new bids on a new schedule of qualtities for their prestressed concrete beam bridge and approaches in Northampton, the Commonwealth of Massachusetts reduced costs from $68,628 to $38,666. How the new prices compare with the rejected bids is shown below.

This single-span bridge will replace an old structure in Northampton, Massachusetts, that was washed out by Parson's Brook during the floods in August 1955. It has a 25-ft span, a 30-ft roadway, one sidewalk, an 8.5-ft clear vertical opening, and 954 sq ft of bridge deck.

W. W. Wyman, Inc. of Greenfield, Mass., got the contract on a price 17.1% above the engineer's estimate and 21% below the second low bid.

Work includes removal of the washed out bridge and erection of a temporary structure in addition to the usual excavating, grading, paving, and construction work for the new bridge. Field operations, started on January 17, 1956, are to be completed by May 4, 1956. Penalties for failure to meet this completion date will be based on losses sustained by the Commonwealth.

C. M. Damon, Greenfield, is District Highway Engineer for the Commonwealth of Massachusetts, Department of Public Works, Boston.

Wage rates include $3.00 for skilled labor, $2.30 for semi-skilled and $1.65 for common labor.

The bidders include:

1C W. W. Wyman Inc., Greenfield, Mass	$38,666
Low Bid 11-16-55, rejected	68,628
2 Kelleher Corp., Turners Falls, Mass	48,953
5 Continental Const. Corp., Lynnfield Center, Mass	60,050
EE 12-28-55	32,067
EE 11-16-55	59,465

Bids:		12-28-55		11-16-55		(rejected) 1
Item	Unit	Quantity	1C U P	Quantity	U P	U P
Clear & grubb	ac		0.2			$800.00
Excav, earth, roadway	cy	70	$2.00	20		3.00
rock, cl A	cy	10	6.00	33		3.00
bridge	cy	700	5.15	960		3.00
trench, cl A	cy	10	4.00	30		3.00
channel	cy	230	2.00	2,440		2.00
rock, cl B	cy	10	10.00	130		12.00
Trees, less than 24", remov	ea	7	35.00	7		44.00
Borrow, ordinary	cy	120	1.20	1,560		0.60
gravel	cy	850	1.65	1,880		1.00
sand	cy	20	3.50	30		5.00
Grade, roll & finish	sy	1,200	0.20	1,700		0.12
Gravel for surfacing	cy	110	2.00	176		3.00
Bitumen for surf treat	gal	1,100	0.22	1,700		0.23
Bit conc pave, cl I, type I-1	t	17	0.20	17		0.20
Cmt conc misry, cl C	cy			6		60.00
Steel, reinf, for struct	lb			100		0.23
Riprap	cy	80	11.00	275		10.00
Paving, channel	cy	170	13.50	250		15.00
Structure, temp	ls	job	2,200	job		3,000
Bridge, remov	ls	job	1,100	job		2,300
Pipe, RC, 24"	lf			45		6.00
ACCM, 12"	lf	40	5.00			
Paving, bit mix, wwys	sy	20	6.00	60		4.00

Texas Water Mains Extended for $8.46 per lin ft

To improve and balance their water distribution system the City of San Angelo, Texas, will pay $232,724 for 27,500 lin ft of pressure mains, an average of $8.46 per lin ft.

This price covers concrete and cast iron pipe, complete with river and railroad crossings, fittings, valves and gates. However, the owner furnishes one 30x20-in. tapping sleeve and 20-in. gate valve.

Clyde Yarbrough, Inc., Odessa, Texas, got the contract on his low bid, 8% under the second low bid and 3% under the engineer's estimate. Freese & Nichols Co., Fort Worth, Texas, are consulting engineers.

Wage rates range from $0.90 for common labor to $2.00 for bricklayers.

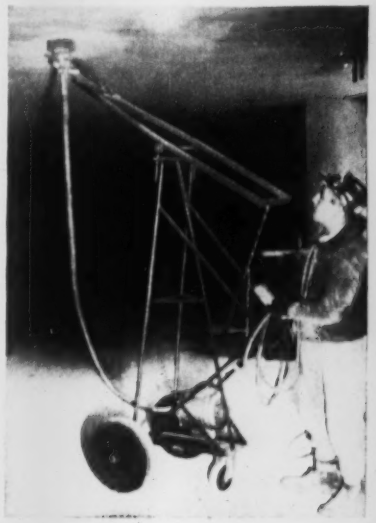
The bidders include:

1C Clyde Yarbrough, Inc., Odessa, Texas	$232,724
2 Ernest Loyd, Midland, Texas	252,826
9 George Consolidated, Houston, Texas	344,125
EE Freese & Nichols Co., Fort Worth, Texas	240,000

Bids: 1 27 56		Quan-	Unit Prices	
Items	Unit	tity	1C	2
Pipe, conc, cylinder, 20"	lf	23,926	$6.58	$7.00
16"	lf	3,546	5.62	6.00
CI, 20"	lf	18	14.00	15.00
12"	lf	18	5.50	7.00
10"	lf	32	4.63	6.00
8"	lf	96	3.56	5.00
6"	lf	560	2.73	3.00
Fittings, main line	ls	job	2,930	4,200
main line	ls	job	4,325	5,600
main line	ls	job	3,340	4,700
main line	ls	job	1,280	1,500
Gate valv & vault, 20"	ea	11	1,213	1,200
boxes, CI, 16"	ea	2	439.00	700.00
10"	ea	1	181.00	200.00
8"	ea	2	132.00	125.00
6"	ea	6	99.00	100.00
Tapp sleev & gate valv, 8"	ea	1	239.00	220.00
10"	ea	1	317.00	325.00
6"	ea	13	172.00	175.00
Fire hydrants	ea	7	173.00	200.00
Tap-exhaust, 1 1 2", & box	ea	2	40.00	125.00
Crossing, railroad	ls	job	325.00	450.00
railroad	ls	job	825.00	850.00
railroad	ls	job	325.00	450.00
river	*ls	job	3,000	6,000
Backfill, sand	cy	5,400	2.10	1.75
Fittings, CIP	t	5	400.00	400.00
Conc, 1,500 lbs	cy	200	18.00	25.00
Steel, reinf	lb	500	0.15	0.20
Blow-off, 6", river cssg	ea	1	185.00	200.00
Connection, 20" to exist CIP, 30"	ls	job	25.00	300.00
Connection	ls	job	75.00	400.00

* In addition to conc pipe, reinf steel, etc
Time allowed: 250 calendar days
Liquidated damages: $25.00 per day

RUBBING CEILINGS?



Do it GIRAFFE with a CEILING GRINDER

- FASTER AND EASIER: One man will average almost 4000 sq. ft. per day. Does not need scaffolding.
- CHEAPER AND BETTER: Money saved on finishing will help pay for grinding.
- DEPENDABLE: Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.

GIRAFFE®

Heights up to 24 ft.

Has been adapted to cleaning ceilings.

CONCRETE GRINDING CORP.
300 STRAIGHT ST. PATERSON, N. J.

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Mar 29—Clay Products, Lime, Plaster, Paint, Roofing, Wage Rates, Building Board, Lath, Insulation
- Apr 5—Cement, Aggregates, Ready-mixed Concrete, Asphalt
- Apr 12—Iron and Steel Products, Pipe

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N.C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

		1x6 S4S	1x8 S4S	2x4 S4S	2x6 S4S	2x8 S4S	2x10 S4S	3x12 Rough	6x12 Rough	12x12 Rough	LONG LEAF Y.P. Merchantable grade up to 20 ft. 2x12 Rough	LONG LEAF Y.P. Merchantable grade up to 20 ft. 12x12 Rough	PLYWOOD Rail freight increment (See note for base price) 3/8"	PLYWOOD Rail freight increment (See note for base price) 1/4"
Atlanta	†	$80 00	$82 00	$77 50	$76 00	$79 50	$83 00	$81 00					$22 32	$27 24
Baltimore	*	93 00	98 00	98 00	100 00	100 00	104 00	114 00			$170 00	$185 00	25 92	31 60
		110 00g	*110 00g*	*128 00g*	*128 00g*	*128 00g*	*128 00g*	*133 00g*	*$144 00*	*$144 00*				
Birmingham	†	86 00	88 00	81 00	88 00	91 00	96 00	111 00			115 00	160 00	21 78	26 58
		111 50	*111 50*	*114 50*	*116 00*	*116 00*	*116 50*	*114 50*	*111 50*	*111 50*				
Boston	*	110 00x	113 00x	115 00x	115 00x	115 00x	113 00x						25 92	31 60
		98 00m	*98 50m*	*133 00*	*133 00*	*133 00*	*134 00*	*137 00*	*150 00*	*155 00*				
Chicago	**	104 00	107 00	100 00	115 00	123 00	124 00	119 00			147 00	147 00	22 45	27 37
		118 00	*118 00*	*136 00*	*134 00*	*134 00*	*135 00*	*135 00*	*135 00*	*135 00*				
Cincinnati	*	99 25	100 25	88 00	96 00	100 25	109 00	117 00			138 75	138 75	25 00	30 48
		101 75	*101 50*	*113 50*	*115 00*	*110 50*	*116 75*	*140 00*	*140 00*	*140 00*				
Cleveland	**	96 00	98 00	105 00	102 00	102 00	103 00						25 37	30 93
				119 00	*113 00*	*113 00*	*113 00*	*136 00*	*136 00*	*136 00*				
Dallas	k‡	75 00	80 00	72 00	72 00	70 00	70 00	130 00			130 00	130 00	18 72	22 80
Denver	*	*Not in stock*		*120 00*	*121 00*	*121 00*	*125 00*	*138 00*	*155 00*	*161 00*			13 92	16 98
Detroit	‡	118 00	118 00	111 00	115 00	118 00	118 00						25 00	30 48
		128 00	*126 00*	*133 00*	*130 00*	*130 00*	*130 00*	*176 00*	*185 00*	*185 00*				
Kansas City	*	130 00	130 00	130 00	130 00	140 00	140 00						16 56	20 16
		150 00	*150 00*	*140 00*	*130 00*	*150 00*	*150 00*	*165 00*	*185 00*	*210 00*				
Los Angeles	†	*112 00*	*112 00*	*112 00*	*112 00*	*112 00*	*112 00*	*155 00*	*155 00*	*155 00*			16 61*ab*	20 25*ab*
Minneapolis	#	*155 00*	*155 00*	*150 00*	*150 00*	*150 00*	*150 00*	*175 00*	*175 00*	*175 00*			19 89	24 25
Montreal	*ab*	94 00	102 00	94 00	94 00	110 00	130 00				115 00	115 00		
		172 00	*172 00*	*172 00*	*172 00*	*172 00*	*172 00*	*160 00*	*160 00*	*160 00*				
New Orleans	†	102 00	102 50	94 50	87 00	92 00	96 00	120 00			152 00	150 00	18 72	22 80
	†	*119 50*	*119 50*	*124 00*	*129 50*	*129 50*	*129 50*	*142 00*	*142 00*	*142 00*				
New York	‡	119 00	120 00	127 00	131 00	131 00	131 00	172 00			259/279	259/279	25 92	31 60
				129 50	*131 00*	*131 00*	*131 00*	*169/179*	*17¢/18¢*	*17¢/18¢*				
Philadelphia	‡	Range from $117.00 to $137.00						117/137	117/137		214/224	214/224	25 92	31 60
		Range from $131.00 to $165.00						*151/165*	*150/158*	*158 00*	*158 00*			
Pittsburgh	†	103 00	107 00	104 00	105 00	110 00	110 00	165 00			145 00		25 92	31 60
		190 00	*192 00*	*145 00*	*138 00*	*145 00*	*155 00*	*180 00*	*190 00*	*205 00*				
St. Louis	#	124 00	126 00	130 00d	135 00d	135 00e	136 00e						18 72	22 80
				137/139	*130 00e*	*130 00e*	*131 00e*	*190 00e*	*190 00e*	*185 00e*				
San Francisco	*A*	*91 00*	*91 00*	*90 00*	*90 00*	*90 00*	*90 00*	*115 00*	*138 00*	*154 00*			12 22	14 91*a*
Seattle	†	*71 00*	*76 00*	*78 00*	*78 00*	*78 00*	*78 00*	*101 00*	*105 00*	*110 00*				
Toronto	*a*	106 00	109 00	104 00	104 00	106 00	107 00	116 00			113 00			
		114 00	*117 00*	*131 00*	*131 00*	*131 00*	*134 00*	*139 00*	*147 00*	*147 00*				

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. 2. Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd., truckload lots, 5/6 Mfibm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Tax exempt. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *g No. 1 common. *j 8ft. lengths. *k No. 3 common. *n #3. A Incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on 3/8", $179.00; on 1/4", $201.00. Exterior 3/8", $199.00, 1/4", $223.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a Lower rate by water shipment. *b 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950‡ Single or Double Thickness A quality	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950‡ Single or Double Thickness B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2165
Baltimore	74%*d*	76%*d*	.2165
Birmingham	82%	83%	.1915
Boston	72-10%	72-10%	.2165
Chicago	74%	74%	.2465
Cincinnati	74%	74%	.2465
Cleveland	74-2-10%	74-2-10%	.2865
Dallas	75%	75%	.2540
Denver	73%	73%	.2515
Detroit	74-10-10%	74-10-10%	.2465
Kansas City	76-10%	76-10%	.2515
Los Angeles	71%	78%	.2490
Minneapolis	73-10%	73-10%	.2515
Montreal	40-10-5%*bc*	40-10-5%*b*	22.05*h*
New Orleans	76%	78%	.2515
New York	80%	80%	.4125*g*
Philadelphia	74%	76%	.2465
Pittsburgh	78%	78%	.2465
St. Louis	76-10%	76-10%	.2515
San Francisco	61%	69%	.2465
Seattle	68%	71%	.2490

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c Single thickness. *d Discount 8/15/52. *e Discount eff. 12/31/54.

Explosives: * Cartridges of 1 1/4", 1 1/2", 1 3/4", 2", 2 1/4", 2 1/2", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40% Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.1915	$0.2265	$0.2465
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.1965	.2315	.2515
Rocky Mtn. States	.1965	.2315	.2515
Pacific N. W. States	.1940	.2290	.2490
Pacific S. W. States	.1915	.2265	.2465

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in., 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in., 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in., 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in., 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in., 2-ft. from butt	6-in.	50 to 59-ft.	.50/58	....
14-in., 2-ft. from butt	6-in.	70 to 79-ft.	.78/ 88	.93
14-in., 2-ft. from butt	5-in.	80 to 85-ft.	.83/93	.94
14-in., 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in., 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

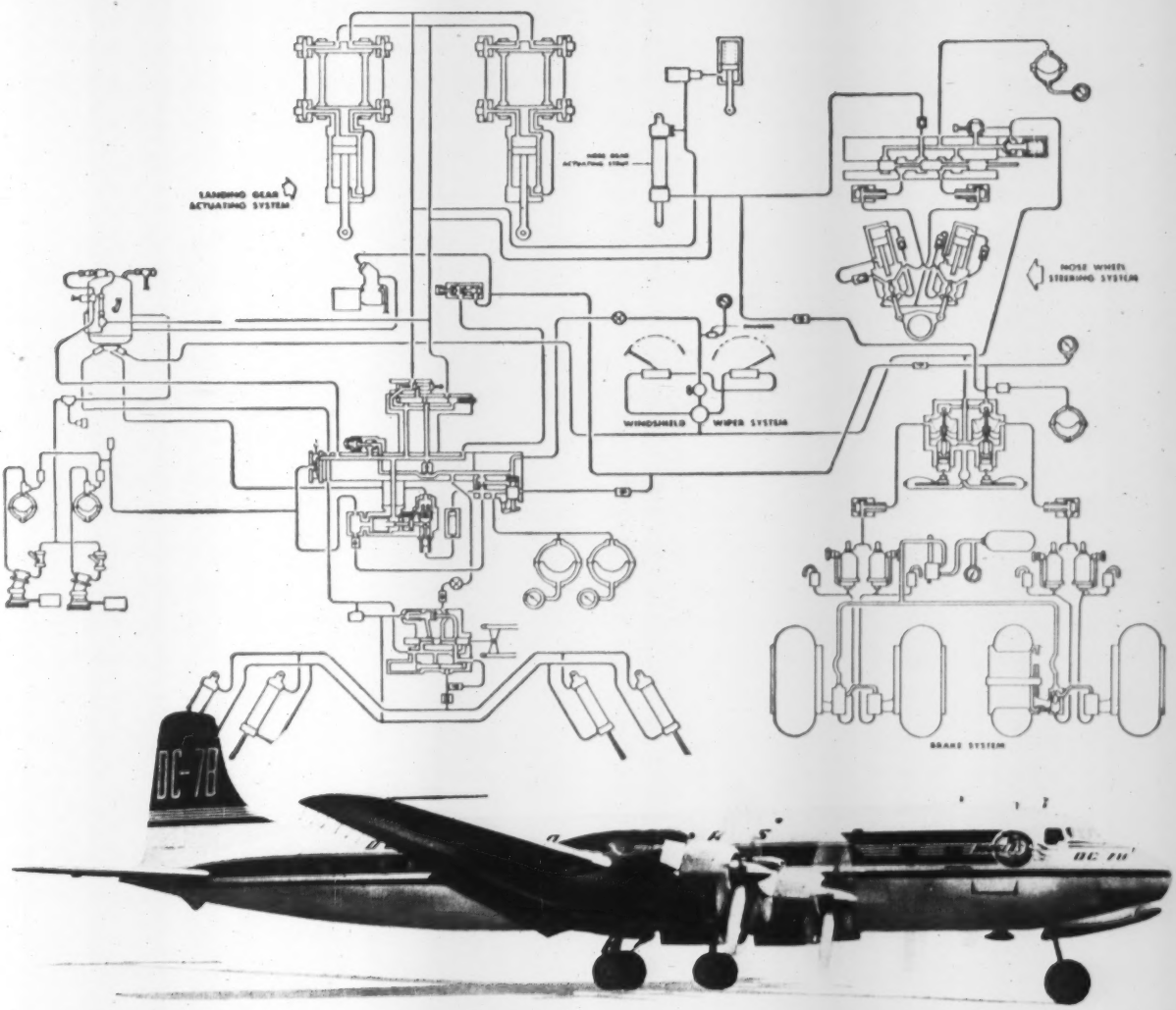
		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak		3.75*a*		4.50*a*
New York	S. L. Sap Pine	2.00	4.00	3.00	5.00
	Mixed Oak	2.50	4.50	3.50	5.50
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.60/3.80	5.50/5.75
St. Louis	White Oak	2.50		2.80	
	Red Oak	2.40	2.95*e*	2.65	3.30*e*
	Sap Pine or Cypress		2.85*e*		3.25*e*
San Francisco	Douglas Fir	2.5*tef*	3.48*ef*	3.35*f*	5.12*eaf*

Tr., Treated; Untr., Untreated. *a* Creosoted. *b* 7" x 9" x 8'. - Empty cell *e* Green. *f* f.o.b. cars. * Add 75*e* tie freight charge to Birmingham.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.50



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Douglas chooses Enjay Butyl for rubber components of the hydraulic systems in many of its famous DC-7 airliners. These components, which help assure the dependable operation of everything from wing flaps to landing gear, are proving over millions of air miles their durability and resistance to wear.

Versatile Enjay Butyl rubber may well have a place in *your* operation. It will pay you to investigate the many technical advantages it has over other types of rubber. Its price and ready availability are advantages, too. For full information, and for technical assistance in the uses of Enjay Butyl, contact the Enjay Company today,

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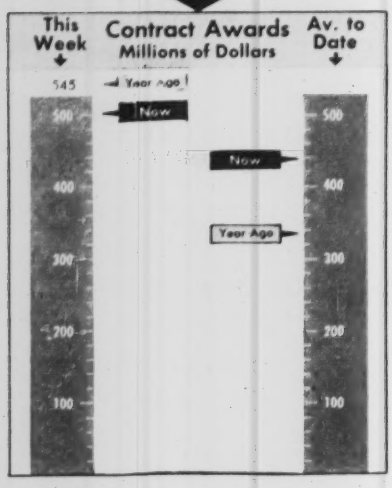
Enjay Butyl is the super-durable rubber with *outstanding* resistance to aging • abrasion • tear • chipping • cracking • ozone and corona • chemicals • gases • heat • cold • sunlight • moisture.

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 12 wks 1956	Chge %
	$ millions		
Federal	$13.8	$145.9	+4
State and Municipal	94.6	1,372.2	+30
Total Public	108.4	1,795.1	+23
Total Private	392.9	3,498.7	+36
U. S. Total	$501.3	$5,293.8	+31
By Type of Work			
Waterworks	$4.8	$58.8	−11
Sewerage	9.9	167.3	+35
Bridges	51.1	163.3	+49
Highways	30.6	475.8	+17
Earthwork, Waterways	5.8	146.4	+75
Buildings:			
Public, Excl. Hsg.	39.4	455.1	+14
Public Housing	1.6	100.4	+133
Private Housing	63.9	1,493.9	−5
Commercial	43.3	517.5	+39
Industrial	229.7	1,310.1	+164
Unclassified	20.7	105.2	+6
U. S. Total	$501.3	$5,293.8	+31

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

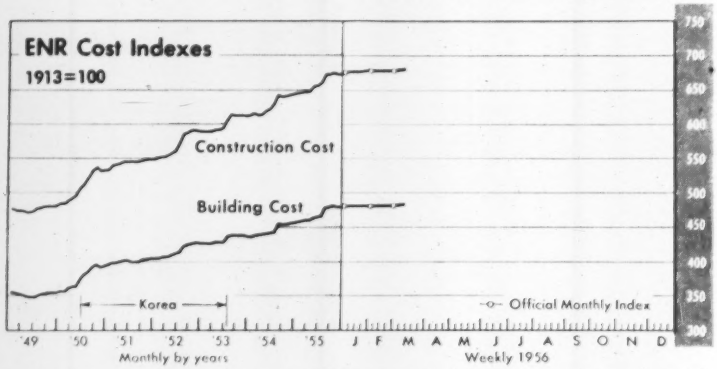
NEW CAPITAL FOR CONSTRUCTION

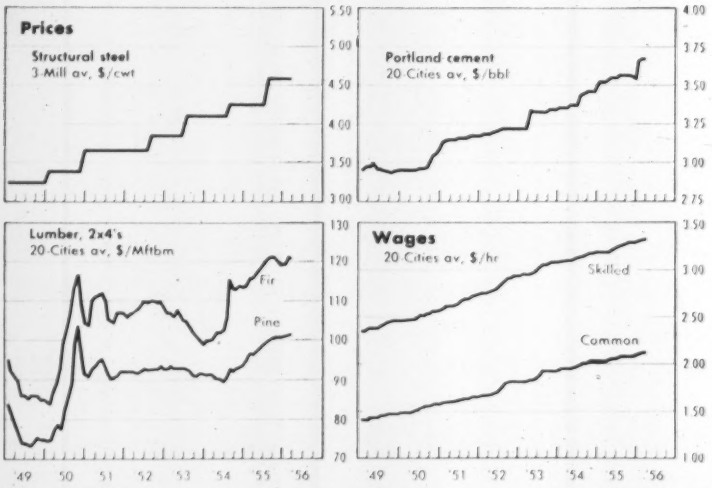
	Week of Mar. 15	Cum. 11 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$119.6	$584.8	−9
State and Municipal:			
All Except Housing	115.6	1,045.1	+20
Housing	...	20.3	−41
Federal Loans	4.0	22.3	+16
Federal Aid	...	...	...
Total Nonfederal	$239.2	$1,672.5	+6
Federal Appropriations:			
In U. S.	$...	$34.4	...
Outside U. S.	...	...	...
Total New Capital	$239.2	$1,706.9	+9

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	1956 Mar. 15	Percent Change from last Month	Year
Construction Cost	682.51	+0.4	+5.7
Building Cost	434.85	+0.4	+5.4

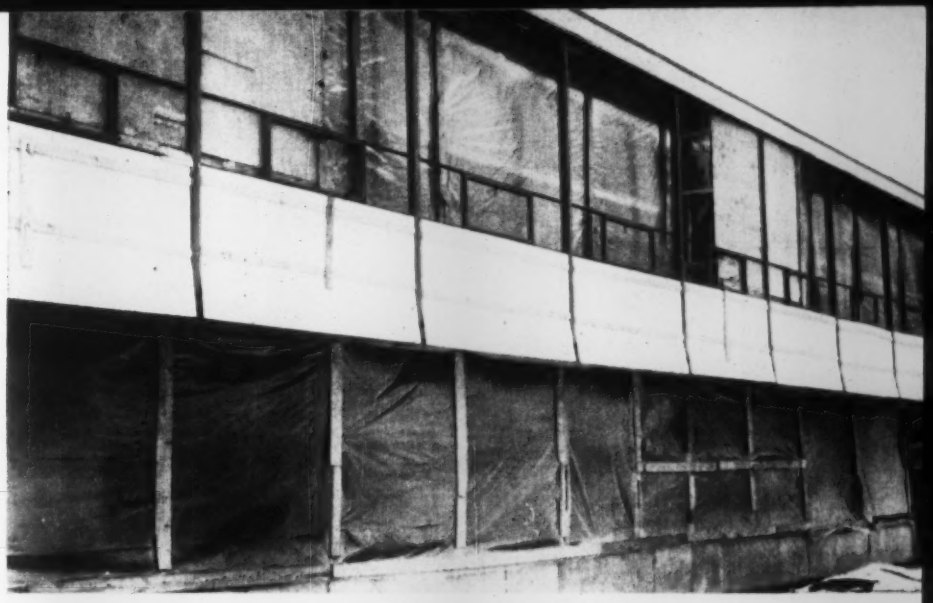
To convert above indexes to 1926=100: Divide Construction Cost by 2.080; Building Cost by 1.815.
1949=100: Divide Construction Cost by 1.770; Building Cost by 1.518.





COST INDEXES IN 22 CITIES City	1956 Mar.	Construction Cost % Chg fr last Month	Year	1956	Building Cost % Chg fr last Month	Year
Atlanta	502	0	+5.9	424	0	+6.0
Baltimore	591	0	+3.0	472	0	+4.9
Birmingham	546	0	+6.8	443	0	+4.7
Boston	712	−0.3	+5.5	490	−0.6	+7.0
Chicago	769	0	+4.5	493	0	+5.1
Cincinnati	674	0	+4.5	469	0	+4.2
Cleveland	785	+0.3	+3.4	489	+0.4	+3.6
Dallas	512	0	+5.8	428	0	+6.5
Denver	655	0	+3.1	487	+0.2	+3.6
Detroit	778	+0.1	+4.7	505	+0.4	+5.0
Kansas City	707	0	+6.3	499	0	+6.6
Los Angeles	714	−0.7	+7.0	485	−1.0	+7.1
Minneapolis	721	0	+3.4	503	0	+2.2
New Orleans	547	−0.2	+4.8	451	−0.4	+4.6
New York	816	+0.4	+9.2	553	+0.4	+4.1
Philadelphia	722	0	+3.7	536	0	+2.9
Pittsburgh	688	0	+4.7	500	0	+4.6
St. Louis	757	0	+9.2	523	0	+8.3
San Francisco	693	+0.3	+5.3	471	+0.2	+5.4
Seattle	715	0	+5.8	439	0	+6.0
U.S. 20 cities' avg.	680	0	+5.3	483	0	+5.0
Montreal	552	+0.4	+2.0	429	+0.5	+1.9
Toronto	572	+0.5	n.a.	459	+0.4	n.a.

For ENR cost indexes for preceding years see insert chart ENR Sept. 29, '55. Extra copies 20 cents.

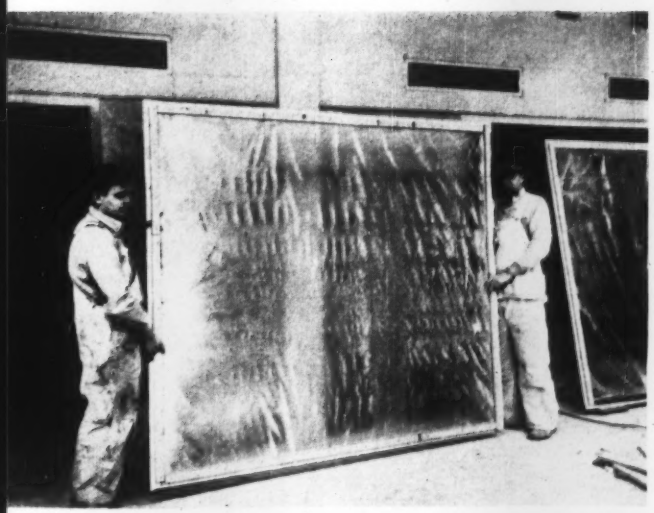


For this school addition nearly 5000 square feet of "Visqueen" film made of BAKELITE Brand Polyethylene was laid over the conventional wooden scaffolding. Shielding against high winds, the film helped hold in heat from stoves, permitting brick to be laid even when snowing outside. On milder days, sunlight through the film produced so much heat, stoves were left off.

Sharon Center School, Sharon, Conn., Sherwood, Mills & Smith, Stamford, Conn., *Architects*
John C. Smith, Inc., New Canaan, Conn., *Contractor*

How to beat bad weather work stoppage with

Polyethylene Weather Shields



As outer walls were completed, film removed from the scaffolding was stapled into large wooden frames. These were fastened into window frames to shield until time for glazing. The film is .004 inch thick, 13 ft. wide and supplied in 100 ft. rolls. This application was developed by **The Visking Corporation,** Terre Haute, Ind.

It is both easy and economical to keep work going on right through the coldest winter months. Tough, moisture-resistant film made of BAKELITE Brand Polyethylene, covering building openings, protects materials and workmen against snow, rain, cold and high winds. And, in addition, translucent polyethylene weather shields tend to reduce construction lighting as well as heating costs.

It can be very profitable to you to investigate this and all the other construction uses of film made of BAKELITE Polyethylene—such as moisture and vapor barriers under concrete slab foundations, covers for materials and equipment, shower liners, dust barriers. See your building supply dealer, or write Dept. NN-49.

It pays to specify film made of

BAKELITE
BRAND
Polyethylene Plastic

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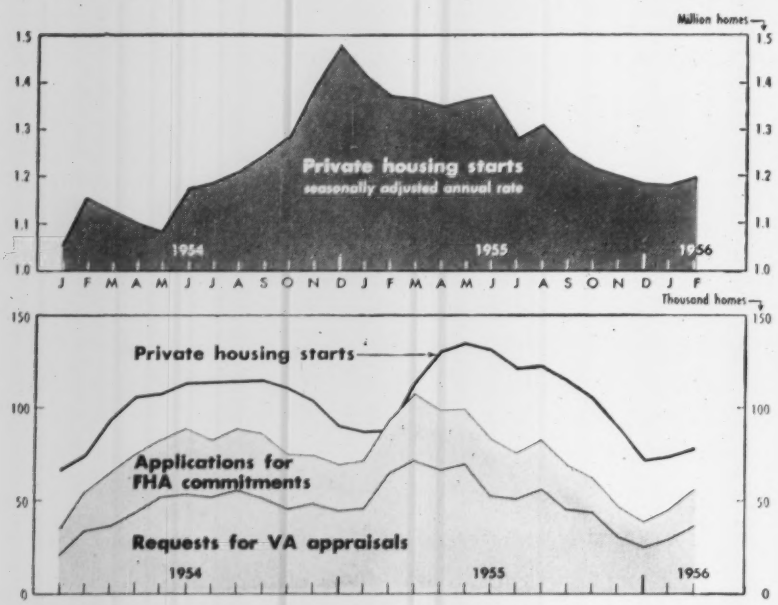


THE LONGER LOOK:

Despite a slight pick-up in February, consensus is that the slowdown in housing may continue for several months

New housing starts have been slipping almost steadily since last May. Indeed, according to the seasonally adjusted government figures, the decline started in January of last year. And despite a slight pick-up in February some economists look for homebuilding to drag along for a few more months before there is any sharp recovery.

The reason for the pessimism about housing starts is largely that the figures on new starts have not reflected the much steeper dip in applications for FHA commitments and requests for VA appraisals. Both of these advance indicators reached higher points last March than they had hit since housing's all-time record year of 1950. By December, they were back to early-1954 levels. Gains were recorded in January and February, but not enough to indicate a really big rise in starts this spring.

• **Best "slump" yet**—The drop in housing starts through the summer and fall months still leaves homebuilders operating at a pretty fast clip. Winter starts have been running higher than in any years since 1950-51 except last year. And the seasonally adjusted annual rate has been holding near 1,200,000—a high rate by any standards but those of 1950 and 1955.

The question is whether the spring rise will be large enough to maintain the 1,200,000 rate. This is what the economists are wondering when they look at the recent course of the FHA and VA figures on proposed construction.

• **Pattern is shifting**—Government underwriting of mortgages has been a big factor in the homebuilding boom of the 1950s. In the six years from 1950 through 1955, FHA financing accounted for 26% of all privately financed new nonfarm housing starts and VA financing for another 19%.

But the percentage backed by FHA has been dropping, while the VA share has doubled.

Percentage of Private Starts Underwritten by—

	FHA	VA	Both
1950	36.0%	14.8%	50.8%
1951	25.8	14.6	40.4
1952	26.2	13.2	39.4
1953	23.6	14.7	38.3
1954	23.0	25.5	48.5
1955	21.1	29.9	51.0

Use of FHA and VA financing has varied with the generosity of terms allowed by the government, reaching a peak last spring when many mortgages were written for 30 years with no down payment. Last June, 716,000 of the 1,314,000 private starts carried government-backed mortgages. The drop in financing applications—followed shortly by the decline in housing starts—came when terms were tightened last summer.

There has been some change also in the percentage of applications that actually show up in housing starts. The ratio of VA-underwritten starts to requests for VA appraisals was 90% in 1951, but in every year since then it has been around 60%. FHA-underwritten starts have held closer to this number of applications for commitments—90% in 1955. In 1950-52 there were more FHA-insured starts than applications for FHA commitments.

• **What the figures mean**—The fact that an FHA application or a request to VA for an appraisal won't necessarily show up in an actual housing start within a definite number of months—or ever—makes it hard to interpret the figures on proposed construction.

Last spring, the peak in applications and requests to FHA and VA came two months before the peak in new housing starts. But there are indications that the bulge in applications last spring was still being felt through the fall months. For example, the peak in 26-30 year mortgage loan closures was reached in November, even though the government clamped down on these long-term maturities at the end of July.

The fear of the economists, who have been emphasizing the downward drift in the new FHA and VA applications, is that this reserve of proposals put in last spring may be nearly exhausted. If so, then new starts may not show their usual revival this spring and the seasonally adjusted figures may dip to 1,000,000 or even less from the present 1,200,000 rate for a month or so.

• **Brighter signs**—Although a plausible case for a slowdown in homebuilding can be made from all these statistics, there is no shortage of optimistic signs.

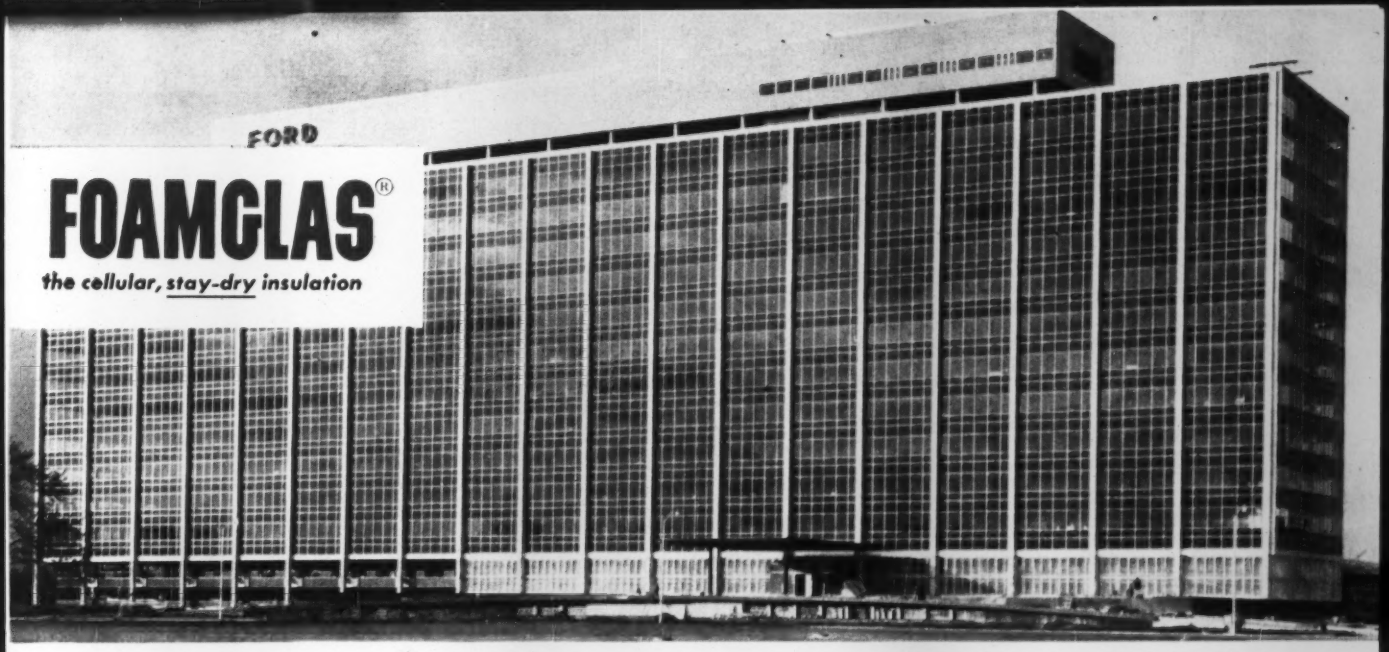
• Large builders have reported plans to start about as many new units this spring as they did last year.

• There is a growing feeling that, with government-backed mortgages less attractive than they were last year

(*Continued on page 109*)

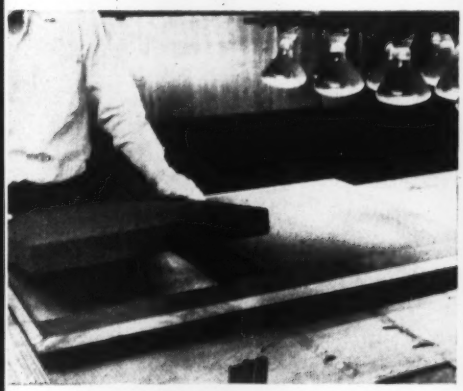
FOAMGLAS®

the cellular, stay-dry insulation

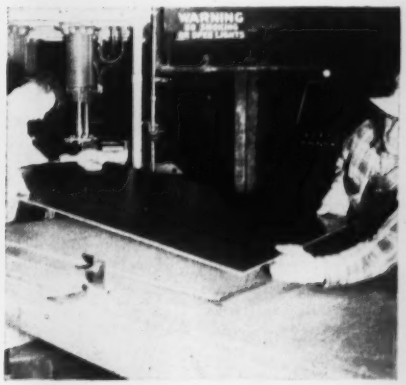


FOAMGLAS-porcelain panels give FORD durable curtain walls with constant U-value

As up-to-the-minute as the Ford family of fine cars . . . the Ford Motor Company's new $30,000,000 Central Staff Office Building at Dearborn, Michigan, demonstrates the functional simplicity of design possible with curtain wall construction. An integral feature of the 6,616 prefabricated porcelain enamel curtain-wall panels is the 2" insulating core of FOAMGLAS to provide vital structural and thermal benefits.

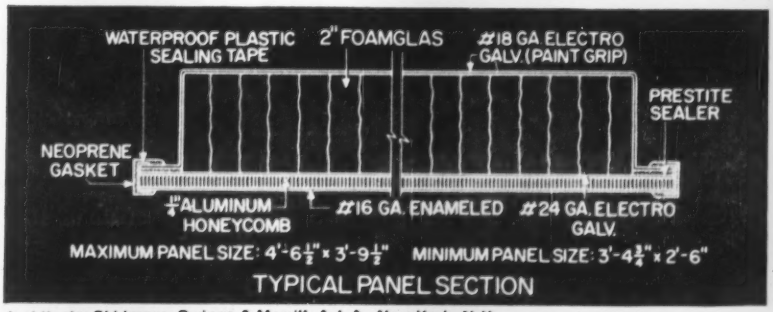


Since FOAMGLAS is impervious to moisture, insulating value remains unchanged under all weather conditions. Ford can count on a constant U-factor of 0.15 for the finished panels. What's more, FOAMGLAS is completely inorganic, dimensionally stable and will not deteriorate in service. It's fireproof, too, for extra building safety.



With a compressive strength of over 7 tons per sq. ft., FOAMGLAS withstood all laminating pressures required to make each panel a sound structural unit. Its light yet rigid structure helped strengthen the finished units while weight was held to just 7½ lbs. per sq. ft.

Each panel unit was inserted in a preformed rabbet in the building's aluminum grid frame. An aluminum stop moulding was then screwed into the frame and topped with a cover moulding. Panels were installed at the rate of 4 per hour for a final erected cost of only **$4.25 per sq. ft.**



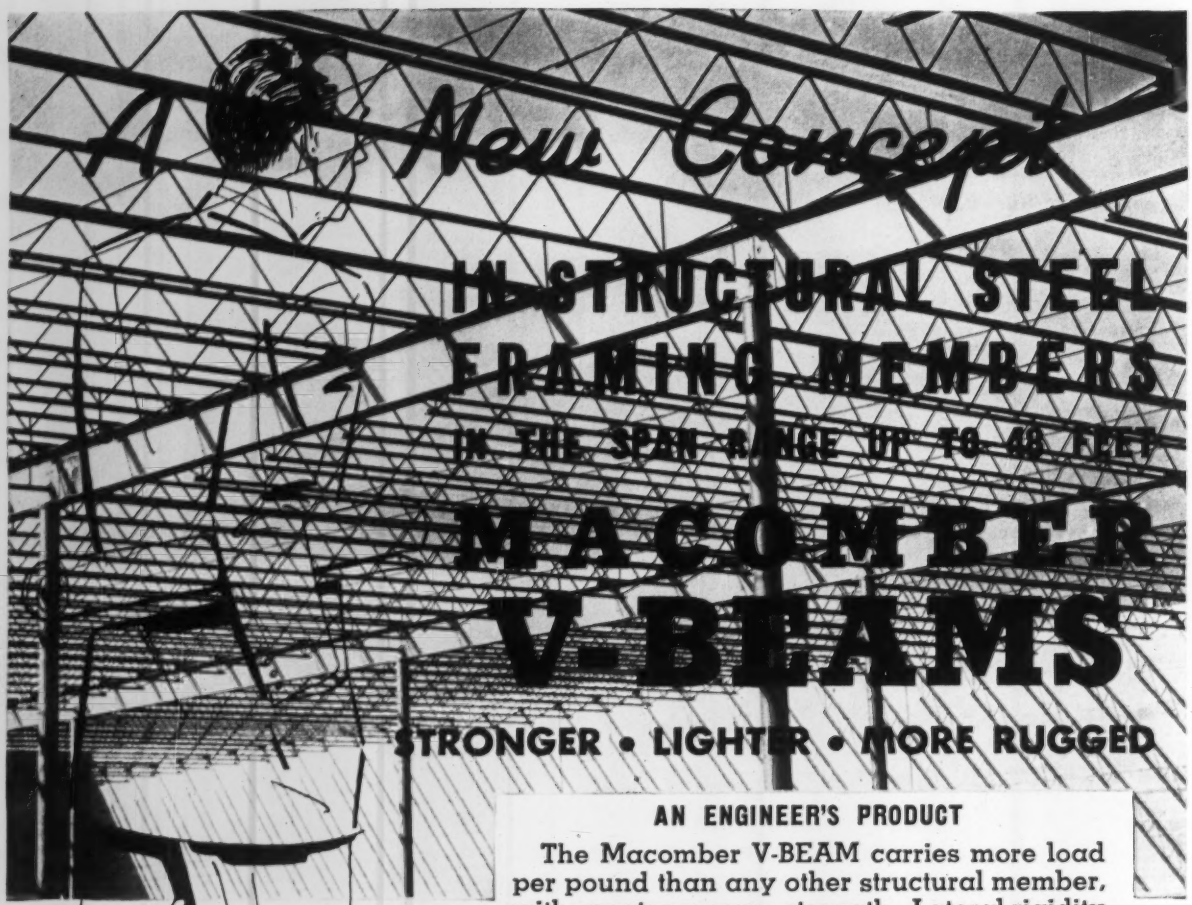
TYPICAL PANEL SECTION

Architects: Skidmore, Owings & Merrill, A. I. A., New York, N.Y.
Consulting Engineers: Jaros, Baum & Bolles, Inc., New York, N. Y.
General Contractor: Bryant & Detwiler Co., Detroit, Mich.
Panel Manufacturer: Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

Ford also took full advantage of the outstanding insulating performance of FOAMGLAS by using it to insulate all roof areas and exterior columns in the new building. Whatever your own insulating problems, it will pay you to send today for detailed literature on the use of cellular, **stay-dry** FOAMGLAS . . . the strong inorganic insulation for panels, roofs, ceilings, walls, floors, piping or equipment. Write us, specifying your insulating problems. Address:

Pittsburgh Corning Corporation

Department K-36, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario



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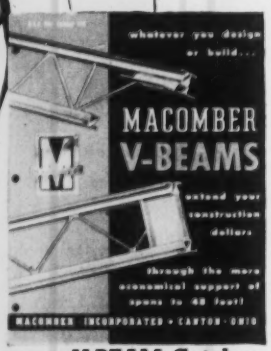
The Macomber V-BEAM carries more load per pound than any other structural member, with greater reserve strength. Lateral rigidity is appreciably increased.

PERFORMANCE — proved by extensive Pittsburgh Testing Laborator tests — transcends all existing framing standards. If you want to extend your construction dollars through the more economical support of spans to 48 feet—the V-BEAM is your qualified framing member.


whatever you design or build...
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V-BEAMS
extend your construction dollars
through the more economical support of spans to 48 feet!
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Send for your V-BEAM Catalog.

Shown above: Country Fair Shopping Center, Zanesville, Ohio. Don M. Castro and Don M. Castro, Jr., Developers. C. Melvin Frank, A.I.A. Architect.

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at this time, the drop in applications simply means that more people are relying on conventional methods of financing.

• Easing up of government terms—like the authorizing of 30-year terms once again in January—could bring a quick upsurge in new applications.

• The survey recently made for the Federal Reserve Board by the University of Michigan Survey Research Center showed an even higher percentage of consumer spending units planning to buy a new home this year than it did a year ago.

Transit Finance

San Francisco's transit plan is termed feasible

Taxes totaling $31 million a year for the net 30 years will be needed to finance the $875-million first stage of the proposed San Francisco Bay Area rapid transit system.

But even with this high price tag, financing is well within economic feasibility for the area, according to a report by Stanford Research Institute.

The SRI findings came in the wake of another report on the 35-year project. In January the New York City firm of Parsons, Brinckerhoff, Hall & Macdonald concluded that the three-stage project to provide nine counties with fast mass transportation is practical from an engineering viewpoint (ENR Jan. 19, p. 25).

The new report primarily is concerned with financing the first stage, which provides for an underwater tube between San Francisco and Oakland, plus a 123-mi electric railway network to include surface, elevated and subway sections. Second and third stage construction would add 267 route miles.

Although financing would be administered most easily if all public support came from a single source—such as a uniform property or sales tax throughout the transit region—the report suggests that it would be preferable to raise money from a variety of sources.

• **Financing the project**—These sources of revenue were examined by the report:

Fares—Financing by fare revenues should be used as fully as possible, but it cannot do the job alone. Annual operating revenues from the first stage are estimated at $29 million, less than half the total required for combined operating and financing costs.

Bridge tolls—Revenues from San Francisco-Oakland Bay Bridge amount to some $9 million a year above maintenance and operating expenses. The report suggests using these funds—which at present are restricted to highway uses—for the rapid transit system.

Property—Regional property taxes would be necessary to give security to regional bonds. If all property in the counties were taxed uniformly at 67 cents per $100 assessed valuation, the yield would be about $31 million. An alternate idea is a differential tax on property within a certain distance of the transit system. Although sufficient funds could be raised from property taxes alone, the report suggests that part of the support for the project should come from other sources since property owners would not be the only beneficiaries.

Sales taxes—A regional sales tax would produce a high yield and would require very little extra administrative work. A tax of .5 of 1% on retail sales in the nine counties would bring in more than $33 million a year. The tax rate could be lower if this source of income were combined with one or more other fund-raising methods.

Gasoline taxes—Under state law, gasoline taxes are restricted to highway use, so it was suggested that the transit organization might not find this levy one of the most likely sources of support, but if it can be done, a special one half cent per gal tax on Bay area sales would produce $5 million a year, while a 5-cent tax would yield $30 million.

• **Suggested administration**—While SRI made no recommendations, it implied that creation of a rapid transit district embracing the entire region would be more advantageous than an authority. A district—with approval of voters—can issue general obligation bonds, which could be secured by property within the district. It also gains a strong credit rating by its power to tax. On the other hand, an authority usually can issue revenue bonds, but has no taxing power and cannot be rigidly limited geographically.

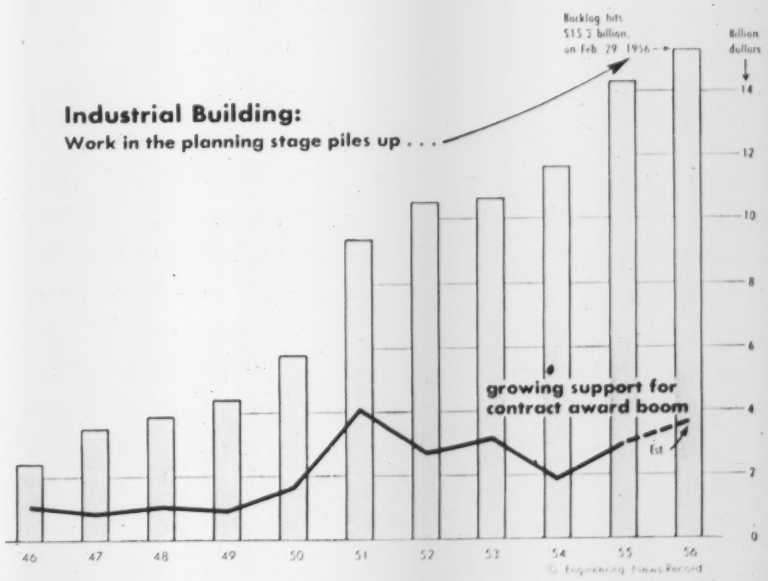
Industrial Expansion Zooms

The greatest peacetime wave of industrial expansion is the major factor in the record volume of heavy construction contract awards made thus far this year.

In the first 12 weeks, industrial building contract volume totals more than two and a half times that recorded during the same period a year ago. The volume of awards during this 12-week period is second only to that chalked up during the same period in 1951, when the outbreak of the Korean War sparked a record expansion of basic industry.

The industrial building boom has a broad base, including most of the key industries. Moreover, all regions of the country are sharing to varying

(Continued on page 110)



degrees in the upswing in capital expansion.

Public utility construction took the spotlight during the first two months of this year, when it accounted for nearly half the volume of all industrial construction contract awards. This was nine times the volume that was reached during the same period of last year.

• **Steel moves up**—Now steel is challenging utilities for top place. Contracts for a $200-million expansion by Bethlehem Steel at Sparrows Point, Md. and two construction programs by Jones & Laughlin at Aliquippa, Pa., and Cleveland, totaling more than $100 million, were awarded just last week. Awards for rolling and refining facilities are skyrocketing, with the total for the 11 weeks of this year already well above the 12 months of both '54 and '55.

The process industries, which have led the others in total volume over the past few years, have dropped to third place in the first two months of this year. Volume is 42% under the same period last year.

However, a good chunk of this deficit was being made up by award of a $90-million contract for an alumina plant at Clarington, Ohio, by Olin Mathieson Chemical Corp. earlier this month.

The food industry is climbing on the bandwagon with increased plant construction, as contract awards for the first two months topped '55 by 7%, and pointed to a reversal of the 1954-55 decline established by this category.

• **Backlog growing fast**—Proposed work estimated to cost nearly $1.2 billion was reported to ENR during January and February. This is more than three times the value of proposed industrial projects that went into the backlog in the first two months of last year. As of Feb. 29, ENR's backlog of industrial building stood at $15.3 billion—29% above the amount recorded at the end of February '55.

The accompanying table shows that the industrial backlog has been rising in all regions.

• **From another view**—Business plans for investment in new plant and equipment, as measured in an annual survey by the Security and Exchange Commission and the Commerce Department, point to a rise three times greater than last year's. Last year, capital investment was up some $1.9 billion over 1954. A $6.2 billion increase over '55 is projected for this year.

All major industries are planning substantial increases in expenditures for plant and equipment, according to the SEC-Commerce Department survey.

Highlighting the plans are the tremendous increases slated by steel, 54%; non-ferrous metals, 95%; chemicals, 40%; stone, clay and glass, 38%; motor vehicles and equipment, 65%; and other transportation equipment, 74%.

According to the survey by the federal agencies, manufacturers will spend 31% more this year than last. This, incidentally, is about the same gain as estimated by the McGraw-Hill Department of Economics last fall (ENR Nov. 17, '55, p. 98).

Business Plans 22% Increase in Plant Spending

SEC—Commerce estimates in millions of dollars

	Actual			Planned	% Chge
	1953	1954	1955	1956	'55-'56
Totals	**28,322**	**26,827**	**28,701**	**34,893**	**+22**
Manufacturing	11,908	11,038	11,439	**15,036**	**+31**
Durable goods	5,648	5,091	5,436	**7,685**	**+41**
Primary iron & steel	1,210	754	863	**1,327**	**+54**
Primary nonferrous	412	246	214	**418**	**+95**
Electrical machy & equip.	475	439	436	**579**	**+33**
Machinery excl elctrical	797	694	809	**1,016**	**+26**
Motor vehicles & equipment	989	1,295	1,128	**1,863**	**+65**
Transportation equipment	180	191	274	**477**	**+74**
Stone, clay & glass	346	361	498	**685**	**+38**
Other durables	1,239	1,110	1,214	**1,320**	**+ 9**
Nondurable goods	6,260	5,948	6,003	**7,351**	**+22**
Food & beverages	812	765	718	**813**	**+13**
Textiles	378	331	366	**389**	**+ 6**
Paper	409	455	518	**712**	**+37**
Chemical	1,428	1,130	1,016	**1,426**	**+40**
Petroleum & coal	2,668	2,684	2,798	**3,322**	**+19**
Rubber	161	131	150	**176**	**+17**
Other nondurables	404	451	437	**513**	**+17**
Mining	986	975	957	**1,141**	**+19**
Railroad	1,311	854	923	**1,307**	**+42**
Transportation excl rail	1,565	1,512	1,602	**1,784**	**+11**
Public utilities	4,552	4,219	4,309	**4,989**	**+16**
Communications	1,690	1,717	1,983	**10,636**	**+12**
Commercial & other	6,310	6,513	7,488		

Industrial Awards and Backlog Soar in All Regions

	Contract Awards			Backlog of Proposed Work			
	First 11 Weeks		%	Feb. 28	Feb. 29	% Change	
	1955	1956	Change	1955	1956	12 Months	
Region	(Millions)		'55 '56	(Millions)		2/55 2/56	2/54 2/55
U. S. Total	$435	$1,080	+149	$11,838	$15,254	+29	+8
New England	21	33	+ 59	235	379	+61	+3
Middle Atlantic	165	410	+148	1,632	2,186	+34	+8
South	15	160	+962	1,955	2,730	+40	+8
Middle West	112	229	+104	2,854	3,850	+35	+9
West of Mississippi	93	115	+ 24	4,273	4,752	+11	+9
Far West	29	133	+366	889	1,357	+53	+4

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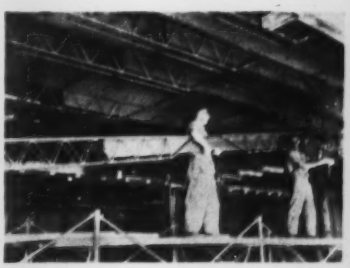
. . . cuts cost of concrete floor forms up to 40%

S-L Spanall—newest of all-metal, adjustable supports used in suspended formwork—has been generally available for only a few months. Yet it is now being specified and used by engineers and contractors in all parts of the country.

The overwhelming demand for S-L Spanall is due to the time, labor, safety and cost saving ease with which the supports are assembled and the camber adjusted for any given load. It takes but a couple of men to position the supports and set up the forms. And S-L Spanall eliminates cumbersome timber shoring . . . provides the tremendous advantage of clear, unobstructed work areas on floor below . . . has a safety factor of 2.17 and substantially reduces the builder's fire hazard.

S-L Spanall is available immediately for sale or rent. Detailed information and consultation upon request. Please address your inquiry to Dept. E.



Stripping S-L Spanall supports from YMCA Annex in Syracuse, New York. With the web-plate sections telescoped into the lattice sections, S-L Spanall is conveniently stored or shipped for re-use elsewhere.

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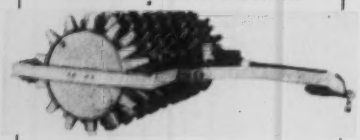
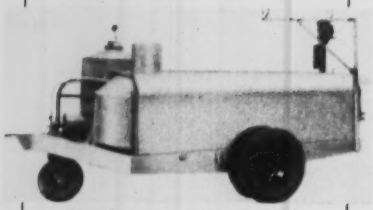
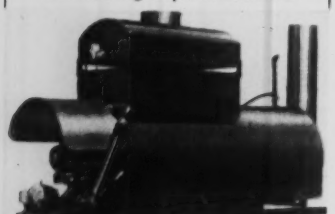


Sheepsfoot rollers

Chip spreaders



Circulating asphalt heaters



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Strike on St. Lawrence Is Settled

Stalemate in contract negotiations with operating engineers stalls work on seaway and power projects

Construction workers on the United States phase of the vast, complex and tightly scheduled St. Lawrence seaway and power projects were called back to work on Monday, after a week-long strike which followed failure to agree on terms for a new labor contract with Local 545 of the operating engineers.

Although the issue was essentially one of wages, the basic dispute was whether the old contract that expired on December 31, 1955 remained alive for wage purposes as to work let and begun before the expiration date of the contract. The union contended that the "carry-over" clause of the AGC contract—under which the contractors had moved in when the St. Lawrence seaway and power projects began—did not apply to the river work. On this, the contractors —who had done their initial bidding under the contract and who claimed to be bound by the AGC formula—disagreed.

The new two-year agreement, reached after three days of mediation, will reportedly continue the AGC pattern and will be a supplement to the new area AGC agreement for heavy and highway construction now being negotiated.

Under the settlement agreement, which is applicable only to the seaway and power projects, the union is to receive an across-the-board 15-cent increase, retroactive to January 1, and another 20-cent increase in 1957 on all bid work undertaken after January 1 of this year. Retroactive to January 1 and effective as to bid work commenced before January 1, the union is granted two rate adjustments at 5 cents each, effective January 1 and June 1, 1956. Maintenance engineers and operators of certain heavy equipment were given special adjustments, but these were reportedly not in dispute.

Negotiations for the new contract were commenced by the AGC early last summer and were continued by the big seaway and power project contractors, who had meanwhile formed the St. Lawrence Contractors Association. Those participating in the negotiations were Morrison-Knudsen, Utah, Walsh Construction, Perinni & Sons, Peter Kiewit and Arthur A. Johnson.

Following the stalemate that developed on the carry-over clause, the engineers struck on March 12 and were supported by members of other unions. Along 40 mi of the river—from Ogdensburg to Massina, N. Y. —more than 3,000 construction workers, many of whom were already discouraged by extreme weather conditions and high costs of living, were idled.

One Hurdle Remains

Settlement reached on all but pension issue in the western teamster dispute

Of the 11 issues submitted to arbitration as an aftermath of the long and costly teamsters' strike in southern California's rock products industry (ENR Mar. 1, p. 82), 10 have been settled. This leaves only the crucial pension plan dispute still to be solved.

Under the arbitration awards, the present contract is extended for three years and will expire Sept. 30, 1958. On Oct. 1, 1956, another 10-cent wage increase will become effective—giving the teamsters a total of 25 cents since the strike began last October.

Although further hearings will be held on the type of pension plan to be adopted, employer contributions at the rate of 10 cents per man per hour will commence not later than July 1, 1957. The pension issue, revolves around the union's desire to use the Western Conference of Teamsters' plan and the employers' demand for a locally administered one.

In settling the 10 issues, arbiter Paul Prasow rejected the teamsters' request for an iron-clad eight-hour day and 40-hour week, but ruled that time worked should be spread among the workers as equally as practicable. The new contract will also strengthen the observance of seniority in layoffs and recalls and in vacation choices where operations permit. Strict seniority will not apply in promotions, or job and shift assignments, except where the candidate's ability, efficiency and experience are equal.

(*Labor continued on page 114*)

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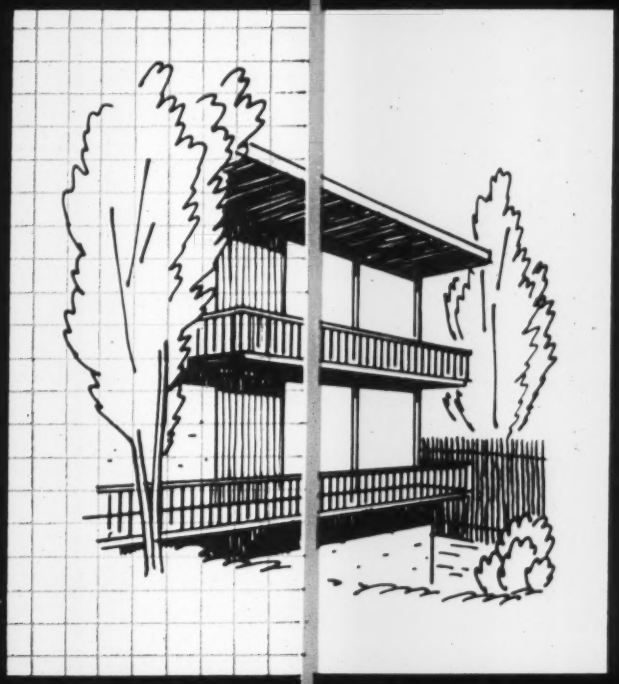

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1

New Rates for Some

Contracts now reflecting longer term, higher basic

Contractors in various parts of the country were revising their labor cost estimates this month as a number of new wage agreements and the $1.00 federal minimum wage became effective.

For the most part, the new contracts are following last year's pattern (ENR Sept. 29, 1955, p. 144), with contracts running for more than one year and with annual increases hitting between 7.5 and 15 cents. In some instances, short-term rates are higher. This is how some of the new agreements shape up:

New Mexico—Effective April 1, a two-year contract with the AGC, covering more than 15,000 workers in five of the basic trades, will give laborers, operating engineers, cement finishers and teamsters an immediate 12½-cent wage boost, plus another 7½ cents next year. (Present scales range from $1.77½ for laborers to $3.07½ for operating engineers.) Carpenters, now getting $2.75, will be raised 15 cents, with another increase of 12½ cents next year. Negotiations with ironworkers—asking for a 25-cent package as did the other trades—are still under way.

Washington—The Eastern Washington Chapter of AGC and cement finishing locals in six Washington and Idaho areas, including Spokane, have signed a three-year contract granting a total increase of 35 cents—representing successive annual boosts of 15, 10 and 10 cents on top of previous scale of $2.75. Additional increases may be granted in 1957 and 1958 if the federal cost-of-living index rises.

Colorado—A new one-year contract between the Colorado Contractors Association and the laborers union grants wage increases ranging from 7½ to 15 cents an hour. The boost for those in Denver is 7½ cents (new scales run from $2.00 to $2.42½); for those outside, the increase is 10 cents, giving a scale range of $1.85 to $2.35; for tunnel work, it's 15 cents, increasing the scale to $2.05-$2.50.

Oregon—The basic rate for plumbers and steamfitters in Portland has moved up 20 cents under a new one-year contract between the Portland Master Plumbers Association and two locals. The new rate—which includes 10 cents for vacation pay—is now $3.35.

Missouri—The Washington County ready-mix dealers have signed a two-year contract with a teamsters' local, granting a 10-cent raise now and a similar increase next year. The contract continues the $2.25 weekly employer contribution to the Central States Welfare Fund and provides for a one-week vacation after one year (two weeks after five years). New rate for material truck drivers is $1.35—it's $1.60 for concrete trucks.

Meanwhile, cement masons in 46 northern California counties have sent a reopening notice to AGC's northern and central California chapters. Their demands will include a 7-hour day with 8 hours' pay.

On the national level, the U. S. Labor Department has called contractors' attention to the fact that some construction contracts, still in process, contain prevailing wage rates based on the old 75-cent minimum. Where this occurred, the old rates are now superseded by the $1.00 minimum, which became effective March 1.

Canadian Province Faces Shortage of Electricians

An increasing demand for electricians in Canada's British Columbia has led the International Brotherhood of Electrical Workers (AFL) to issue a Canada-wide call for 1,500 more electricians to handle construction work planned for the year.

The call stemmed from an announcement by the British Columbia Electric Co. that it is undertaking a multi-million expansion program, including a $7-million steam generating plant near Vancouver and a $43-million project at its Bridge River site.

Although no definite labor requirements have been established for the work, the union estimates between 1,400 and 1,500 men will be needed above the number available in British Columbia. To meet the shortage, it may be necessary to invite U. S. electricians to work in the province this summer.

GAW Payments Have Won Required State Approval

A ruling of the California attorney-general brings to nine the number of states that will permit integration of guaranteed wage payments with state unemployment compensation benefits.

The California action means that the GAW plan negotiated last June between Ford and the auto workers will become effective June 1.

States that have issued favorable rulings are California, Connecticut, Delaware, Florida, Massachusetts, Michigan, New Jersey, New York and Pennsylvania.

OFFICIAL PROPOSALS

Bids: April 11, 1956

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
CHANNEL IMPROVEMENTS
POINT THREE POINTS, LEISHMAN'S POINT AND OGDEN ISLAND
NEAR WADDINGTON, ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-11008
ST. LAWRENCE CONTRACT NO. 27

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Channel Improvements at Point Three Points, Leishman's Point and Ogden Island near Waddington, St. Lawrence County, New York in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A.M. Eastern Standard Time on the 11th day of April, 1956, 270 Broadway, Hearing Room C on the 6th floor, New York, New York.

(2) If mailed in until 10:15 A.M. Eastern Standard Time on the 11th day of April, 1956, at the Authority's office, 270 Broadway, Room 1200, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above.

The principal items of work are estimated to be up to:

10,570,000 cu. yds.	Excavation, common
250,000 cu. yds.	Excavation, rock
80,000 cu. yds.	Riprap
360,000 cu. yds.	Stripping topsoil from spoil and embankment areas
400 acres	Seeded topsoil
80 acres and	Seeding

Constructing sewage facilities for the village of Waddington.

The work shall be completed on or before September 1, 1958.

Plans, specifications and Proposed Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Chi, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set and Five ($5.00) dollars per set for additional sets, no part of which will be refunded.

Bids will not be restricted to American contractors. Dredges and other marine plant shall be registered and built in the United States.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

U. S. Government

United States Department of Commerce, Bureau of Public Roads, March 15, 1956. SEALED BIDS will be received at the office of the Inter-American Highway Office, Bureau of Public Roads, Room 4009, General Services Building, Washington 25, D. C., until 2:00 p.m., e.s.t., April 12, 1956, for construction of Rama Road Project R-3A (Revised) in the Republic of Nicaragua. The project begins at Muhan about 23 miles east of Santo Tomas and extends easterly toward Rama for approximately 15 miles. Bidders will be limited to United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States of America or in the Republic of Nicaragua. The approximate quantities of the major items of work are: 57 Hectáres Clearing and Grubbing 707,000 cubic meters Unclassified Excavation, 50,000 cubic meters Selected Borrow Base, 660 cubic yards Class "A" Concrete, 80,000 lbs. Reinforcing Steel, and 8,000 linear feet Nestable Bituminous Coated Corrugated Metal Culvert Pipe (from 24" to 72"). Special conditions of work performed by U. S. Government in foreign areas apply as well as local laws. Plans, Specifications and Proposal Forms are available upon request at the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, 516 Avenida Roosevelt, Managua, Nicaragua. C. D. Curtiss, Commissioner.

OFFICIAL PROPOSALS

Bids: March 28, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 28th day of March, 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

Contract No.	County	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, R. L. NICKERSON, District Engineer, 353 Broadway, Albany, N. Y.						
FERC 56-7	Greene	Prattsville-Ashland, S.H. 5491 Lexington-Prattsville Pt. 2 & Pt. 1, S.H. 886-1364 Hunter-Jewett Center, S.H. 997 Project No. ER-63(1)	0.46	Stone Filling = 0.35 Mi. Misc. Work = 0.11 Mi.	$1,000 Plans $10	$18,000
FASSH 56-10 FARC 56-82	Greene & Ulster	Phoenicia-Stony Clove, Pt. 1, Hy. No. 214-2-0 Phoenicia-Kaaterskill Junction, S.H. 9048 Project S-937(4)	3.98	Bit. Mac. Pen. Meth., Type 1, 2 R.C. Closed Box Brs. 22.6' & 28.3' Comp. I-Beam Br. 42'	$41,000 Plans $25	747,000
FARC 56-44	Warren & Essex	LoonLake-Pottersville-Taylors, S.H. 692 Taylor-Schroon Lake Village, S.H. 745 Project F-383(10)	7.83	9" Cem. Conc. Pavt. 24' Wide = 7.80 Mi. Asph. Conc., Opt. = 0.03 Mi.	$120,000 Plans $25	2,185,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 Genesee St., Utica, N. Y.						
FAC 56-19 FASH 56-15 FARC 56-96	Fulton	City of Gloversville: Route 148 By-Pass, Hy. No. 148-3-3; Route 148 By-Pass at Gloversville, Hy. No. 148-3-4; Gloversville-Mayfield, S.H. 33 Project U-UG-419(6)	5.72	Asp. Conc., Opt. = 4.98 Mi. Grading = 0.21 Mi. Gravel Surface Treated = 0.53 Mi.	$45,000 Plans $25	868,000
DISTRICT No. 3, WM. ROBINSON, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
FISH 56-11	Onondaga	Interstate Route 5 (La Fayette to Tully Section) Hy. No. N5-3-55-1 Project IN-397(5)	6.53	9" Cem. Conc. Pavt. 26'-24' Wide = 6.33 Mi. asp. Conc., Opt. = 0.20 Mi.	$140,000 Plans $25	2,540,000
FISH 56-12	Onondaga	Interstate Route 5 (Nedrow to La Fayette Section) La Fayette Interchange Hy. No. N5-3-55-2 Project IN-397(4); F-470(17)	1.94 (Acc.) (1.41)	9" Cem. Conc. Pavt. 26-24' Wide = 0.53 Mi.; Asp. Conc., Ty. 1A = 0.20 Mi.; Misc. Work = 0.11 Mi.; Bit Applic. & Stone Cover = 2.51 Mi. Hy. Sep. Comp. I-Beam 208'	$137,000 Plans $25	2,401,000
DISTRICT No. 7 R. W. SWEET, District Engineer, 443 Van Duzee Street, Watertown, N. Y.						
FARC 56-84	Franklin	Malone-Duane, Pt. 1, S.H. 5552; Malone Village: Fort Covington Street, S.H. 950 Project F-U-55(4)	3.91	Asp. Conc., Opt.	$44,000 Plans $25	805,000
FASH 56-13 FARC 56-90	St. Lawrence	Massena Southside Route Pt. 1, Hy No. 37.2-27 Massena Southside Route Pt. 2 FASH 55-7 Massena-Helena, Pt. 1, S.H. 1261 Project FU-580(10)	5.76	Asp. Conc., Opt. = 5.43 Mi.; Misc. Work = 0.33 Mi. Comp. Pl. Girder Br. 520'	$80,000 Plans $25	1,486,000
DISTRICT No. 9, F. J. WEBER, District Engineer, 71 Frederick Street, Binghamton, N. Y.						
FARC 56-86	Broome	Fenton, S.H. 134; Bridge, S.H. 268 Project U-196(11)	0.69	Asp. Conc., Opt. Comp. Pl. Girder & I-Beam Br. 480'	$40,000 Plans $15	722,000
FARC 56-91	Delaware	Walton Village: Bridge Street and Stockton Ave., S.H. 9347; Walton Village: Delaware St., S.H. 9268 Project F-845(3); S-44(4)	0.42	Asp. Conc., Opt. = 0.41 Mi.; Misc. Work = 0.01 Mi. 2 Comp. I-Beam Brs. 222' and 45.8'	$22,000 Plans $10	400,000
FARC 56-87	Sullivan	Monticello-Liberty, Pt. 2, S.H. 5322; Liberty Village, S.H. 5296; Liberty-County Line, Pt. 1, S.H. 5223 Project F-336(14)	5.79 (Acc.) (4.56)	9" Cem. Conc. Pavt. 26-25' Wide = 8.55 Mi.; Asp. Conc., Opt. = 0.28 Mi.; Bit. Mac., Ty. 1 = 1.02 Mi.; Treated Grav. = 0.50 Mi.; 1 R.C. Box Br. 73.1'; 2 Comp. I-Beam Brs. 103.4' and 68.6'; 1 I-Beam Br. 35'; 4 Hy. Seps. Comp. I-Beams 361.4', 208.3', 211.3' & 237'	$400,000 Plans $100	7,199,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

John W. Johnson,
SUPT. OF PUBLIC WORKS

Bids: April 3, 1956

Contracts 444 and 447

CONTRACT 444—ELECTRIC SUBSTATION AND ELECTRICAL CONTROL EQUIPMENT
CONTRACT 447—CHLORINATING EQUIPMENT

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Tuesday, April 3, 1956, for each of Contracts 444 and 447, as follows:

CONTRACT 444, for furnishing, testing and delivering a 150-Kva. outdoor unit substation and electrical control equipment for the Margaretville-Arkville sewage treatment plant.

CONTRACT 447, for furnishing, testing and delivering chlorinating equipment for the Margaretville-Arkville sewage treatment plant.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., of each of the two contracts can be obtained in the Chief Clerk's office, Room 1317, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. For further particulars apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4661) will be received at Cody, Wyoming, until April 25, 1956, for furnishing labor and materials for Earthwork and Structures for Main Canal No. 1 and Lateral, Main Canal No. 2 and Laterals, and Bluff Laterals No. 1 and 2, Missouri River Basin Project, Wyoming. Location near Worland, Wyoming. Principal items are 466,00 cu. yds. excavation; 11,369 lin. ft. concrete pressure and culvert pipe, 18-inch to 60-inch in diameter; 11,400 cu. yds. concrete in structures; and other work. The work is divided into 2 schedules. Completion time 350 days. For particulars, address Bureau of Reclamation, P. O. Box 839, Cody, Wyoming; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 19, 1956

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
TUNNEL DIVERSION GATES
FOR
LONG SAULT DAM
SPECIFICATIONS NO. PA-5-15079
ST. LAWRENCE CONTRACT NO. P37

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manufacture and furnishing of thirty-four (34) Tunnel Diversion Gates for Long Sault Dam and delivery thereof f.o.b. destination in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A.M. Eastern Standard Time on the 19th day of April, 1956, 270 Broadway, Hearing Room C on the sixth floor, New York 7, New York.

(2) If mailed in, until 10:15 A.M. Eastern Standard Time, on the 19th day of April, 1956, at the Authority's Office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for thirty-four gates having a total weight of approximately 1500 tons.

Bids will not be restricted to American manufacturers.

Plans, specifications and proposal forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Twenty ($20.00) dollars per initial set of contract documents and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid in the bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-15079

Bids: May 7, 1956

NOTICE

Bids for Construction of Hydraulic Dredge Fills at Metropolitan Oakland International Airport, Oakland, California.

The Board of Port Commissioners of the City of Oakland will receive sealed bids at its offices, Room 73 Grove Street Pier, at any time prior to Monday, May 7, 1956 at the hour of 2:30 P.M., for CONSTRUCTION OF HYDRAULIC DREDGE FILLS AT METROPOLITAN OAKLAND INTERNATIONAL AIRPORT, Oakland, California, F.A.A.P. No. 3-04-037-0610. (Estimated quantity 11,000,000 cubic yards, plus or minus 25%). Form of proposal and affidavit thereon will be furnished by the undersigned gratuitously. Plans and specifications will be furnished on deposit of $10.00 check, which amount will be refunded providing plans and specifications are returned within ninety (90) calendar days after receiving bids. No refund will be made after that date. Specifications will be available in Room 73 on Wednesday, March 21, 1956. Certified check in the amount of ten percent (10%) of bid to accompany bid. Bond in full amount of contract to be furnished by successful bidder. Alternate bids are requested for two dates for completion of work. Contract time shall begin on date of written notice from Chief Engineer that contract is in effect. Alternate "A" provides for work to be completed by July 31, 1958, and Alternate "B" provides for work to be completed by November 1, 1957. The Board reserves the right to reject any and all bids.

R. N. Compton, Secretary
BOARD OF PORT COMMISSIONERS

Bids: April 2, 1956

Contract O & M—323

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY AIRPORTS
COAL TAR PITCH EMULSION
TREATMENT OF PAVEMENT

Sealed proposals for furnishing all labor, material and equipment for the furnishing and applying coal tar pitch emulsion seal coating on pavement at La Guardia Airport, New York International Airport, Teterboro Airport and Newark Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11:00 A.M., Monday, April 2, 1956, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Dept., Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 22, 1956

Prequalification Date: April 30, 1956

Calima Hydroelectric Project

CORPORACION AUTONOMA REGIONAL
DEL CAUCA
CALI—COLOMBIA
NOTICE REGARDING PREQUALIFICATION OF CONTRACTORS

It is expected that during the second half of 1956 the Corporación will request bids for the construction of the Calima Hydroelectric Project near Cali. The project will include a dam, maximum height about 95 meters and about 250 meters long, a 120,000-kw underground powerhouse with 140 meters deep vertical access shaft, penstock shafts and a tailrace tunnel with a combined length of approximately 2300 meters, a tributary diversion tunnel 7 to 8 kilometers long, and appurtenant work.

Firms that have satisfactorily performed comparable work and that are interested should apply for prequalification forms to the Corporación, Edificio Zaccour, #934, Cali, Colombia. Requests should be received not later than April 30, 1956. Bids will be received from prequalified bidders only.

Bids: April 17, 1956

Contract NYA-650.012

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
INTERNATIONAL ARRIVAL AND AIRLINE WING BUILDINGS
PAVING AND UTILITIES

Sealed proposals for the construction of paving and the furnishing and installation of utilities for the International Arrival and Airline Wing Buildings at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 17, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.000 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

The Port of New York Authority
Donald V. Lowe, Chairman

New York, March 22, 1956

Bids: March 27, 1956

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
CRIB TIMBERS

SEALED TENDERS, in quadruplicate addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked

"TENDER FOR ST. LAWRENCE POWER PROJECT
PROTECTIVE DYKE, CANADA STARCH COMPANY
CRIB TIMBERS"

will be received up to 4:30 p.m. Eastern Standard Time on

TUESDAY, MARCH 27, 1956

for the supply and delivery of all or any part of approximately two million board feet of plain and creosoted timber as follows:

1,050,000	FBM, No. 1 Rough, Coast Douglas Fir, 12" x 12"
624,000	FBM, No. 1 Rough, Creosoted, Coast-Douglas Fir, 12" x 12"
34,500	FBM, No. 1 Dressed, Creosoted, Coast Douglas Fir, 12" x 16"
64,000	FBM, No. 1 Dressed, Spruce, 2" x 8"
110,000	FBM, No. 1 Dressed, Creosoted, Spruce, 2" x 8"
28,000	FBM, Rough Spruce or Hemlock, 2" x 10"

Delivery is required commencing May 15, 1956 and is to be completed by July 31, 1956.

Copies of the request for tenders may be obtained on or after March 9, 1956 at the office of the Director of Supply, 620 University Avenue, Toronto 2, Ontario.

The lowest or any tender will not necessarily be accepted.

E. B. Easson
SECRETARY

Bids: April 12, 1956

Trunk Sewer Lines

City of Santa Rosa, California

will receive bids at 2 p.m. April 12, 1956 for construction of two trunk sanitary sewers aggregating approximately 13 miles of pipe from 12" to 60" diameter with a Lift Station, two Multiple-Barrel Inverted Siphons, and 6 short Tunnels. The two projects may be bid as a single job on a "both or neither basis" by a competent bidder.

Plans and Specifications may be obtained by properly licensed Contractors from the Consulting Engineer, Frank R. Sarles, 217 Exchange Avenue, Santa Rosa, California or from the City Engineer, City Hall, Santa Rosa, California. Deposit for Plans, Specifications and Contract Documents is $10 for each project.

Any General Contractor who submits a bonafide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded twenty-five dollars per set for each additional set. All others will be refunded twenty-five dollars per set upon the return of the Documents in good condition within ten days after the opening of the bids.

OFFICIAL PROPOSALS

Bids: April 12, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 5 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 12th day of April 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT 2, L. Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Madison	FASS 56-9	Stockbridge Falls-Merrillsville, Pt. 2 Proj. S360-2)	2.43	Graded Gravel Bit. Surf. Treat.; 3 Brs. Twin Conc. Boxes 28', 30' & 32'	$15,000 Plans $15	$260,000
Montgomery	MT 56-1	New York State Thruway—Mohawk Section—Sub. 12C (Canoga Creek-Fort Plain)	—	Drainage Basin with Slide Gate and Misc. Work	$300 Plans $10	5,500
DISTRICT 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
Onondaga	FARC 56-97 FGRC 56-98	Baldwinsville-Cold Spring, S.H. 671 Cold Spring-Liverpool, S.H. 670 Proj. Nos. S405-2; S6405(3)	1.06	Asp. Conc. Opt. 1 Br. Deck Plate Girder 500'; 1 RR Sep. Comp. I-Beam 164.5'	$85,000 Plans $25	1,470,000
DISTRICT 4, B. F. Perry, Acting District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FARC 56-88	Pittsford-Palmyra, Pt. 1 & Pt. 2, S.H. 766-767 Proj. No. F744(6)	7.23	Asp. Conc. Opt.=7.07 Mi.; Edtn. Crse. Grav.=0.16 Mi., Repair to Canal Br. No. 2	$50,000 Plans $25	864,000
DISTRICT 5, E. G. H. Youngmann, District Engineer, 65 Court Street, Buffalo, N. Y.						
Cattaraugus	FAC 56-16 FARC 56-79	City of Olean: South Union Street Olean-Knapp Creek, Ft. 1, S.H. 9092 Proj. S391(1)	3.21	Asp. Conc. Opt.=3.15 Mi. Misc. Work=0.06 Mi.	$42,000 Plans $15	723,000
DISTRICT 6, J. H. Thomas, District Engineer, 30 W. Main Street, Hornell, N. Y.						
Tioga	FARC 56-83	Spencer-Candor, Pt. 1 & Pt. 2, S.H. 845-1079 Owego-Candor, Pt. 2, S.H. 5471 Proj. S730(3)	4.49	Asp. Conc. Opt.=4.44 Mi. Misc. Work=0.05 Mi.	$57,000 Plans $15	955,000
DISTRICT 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess, Putnam and Westchester	TSP RC 56-2	Taconic State Parkway, Westchester County Section, Sections 2, 3 and 4	0.40	Asp. Conc. Opt.=0.15 Mi. Misc. Work=0.25 Mi.	$3,200 Plans $10	57,000
DISTRICT 9, F. J. Weber, Acting District Engineer, 71 Frederick Street, Binghamton, N. Y.						
Broome and Chenango	FARC 56-93 FAS SH56-14	Whitney Point-Greene, Pts. 1 & 2, Hy. No. 206-1-1 and 206-2-1, Whitney Point-Greene, Pts. 1A and 2A, S.H. 8189-9243 Proj. S419(1)	10.84	Bit. Mac. Type 1	$100,000 Plans $25	1,803,000
Sullivan	FARC 56-8P	Bloomingburg-Monticello, Pt. 2, S.H. 5457 Bloomingburg-Monticello, Pt. 1, S.H. 5510-5510A—Proj. F195(10)	8.39 (1.54 Acc.)	9" Cem. Conc. Pavt., 50'-62' Wide=8.39 Mi.; Cem. Conc. Pavt. (Acc.)=1.42 Mi.; Asp. Conc. Opt.=0.12 Mi.; R.C. Closed Box Hy. Sep. 31'	$160,000 Plans $50	2,912,000
Sullivan	FARC 56-78	Fosterdale-Mongaup Valley, S.H. 986 Monticello-Mongaup Valley, S.H. 890 Proj. S194(2)	7.66	Asp. Conc. Opt. Twin Corr. Plate Pipe Arch 28.5'	$80,000 Plans $25	$1,438,000
DISTRICT 10, M. E. Gott, District Engineer, Montauk Highway at Little East Neck Road, Babylon, N. I., N. Y.						
Kings	FA BQE 56-3	Brooklyn-Queens Expressway Contract No. 16w Demolition—Proj. I 1066(9)	0.52	Demolition	$2,500 Plans $10	47,000
Kings	FA BQE 56-2	Brooklyn-Queens Expressway Contract 6B Proj. I 1066(17)	0.82	9" Cem. Conc. Pavt. with Carbon Black, 2 at 36' Wide =0.27 Mi.; Lighting, Signs & Misc. Work=0.55 Mi.; 6 Hy. Sept. Beams 48.3', 44.6', 48.2', 48.2', 111.1' and 97.1', 2 Hy. Sep. I-Beams & Girders, 90.5' and 93.7'	$965,000 Plans $100	2,930,000
Kings	FA BQE 56-1	Brooklyn-Queens Expressway Contract 7B Proj. I 1066(16)	0.46 (1.03 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 at 36' Wide =0.33 Mi. Cem. Conc. Pavt.=0.25 Mi.; Sheet Asph. Pavt. (Service Rds.)=0.81 Mi.; Misc. Work=0.10 Mi.; 4 Hy. Sep. I-Beams 104.4', 104.4', 98.3' and 92.6'	$160,000 Plans $100	2,894,000
Nassau	FA HHE 56-4	Horace Harding Expressway Extension Contract No. 2 Proj. I 862(7)	3.32 (5.86 Acc.)	9" Reinf. Cem. Conc. Pavt., 2 at 36' Wide=2.84 Mi.; Asp. Conc. Opt.=5.86 Mi.; Drainage & Demolition 0.48 Mi.; 2 Hy. Sep. Reinf. Conc. Rigid Frame, 97.5' and 101'; 1 Hy. Sep. Girder 62'	$320,000 Plans $50	5,812,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "STATE OF NEW YORK, COMMISSIONER OF TAXATION AND FINANCE" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

John W. Johnson
Supt. of Public Works

Bids: April 9, 1956

Sewage Treatment Plant

ADVERTISEMENT
NOTICE TO BIDDERS

Notice is hereby given that Sealed Bids or proposals, enclosed in sealed plain wrapper, bearing the appropriate identification "Bid for Sewage Treatment Plant", will be received by the Town Clerk at the office of the Town Board, Town of East Greenbush, New York at 8 o'clock P.M. Eastern Standard Time on the 9th day of April 1956 and then will be publicly opened and read aloud at a meeting of the Town Board to be held at such time and place.

Work includes the complete construction of 0.75 M.G.D. primary Sewage Treatment Plant, consisting of influent distribution manhole, combined comminutor and Venturi Flume, 40' diameter, 7' side water depth primary clarifier, an 8' square grit separator, two 48' x 82' glass covered sludge drying beds, 40' diameter separate sludge digester with floating cover, an 11' x 22' chlorine contact tank, a 30' square control building, all inter-connecting piping and control piping, digester gas and heating system, entrance roadway, site grading and seeding and other appurtenant work.

Copies of the plans and specifications may be examined at the office of the Town Clerk of the Town of East Greenbush, New York, Columbia Turnpike, East Greenbush, New York or at the office of the engineers, Benjamin L. Smith and Associates, 11 North Pearl Street, Albany, New York; copies thereof may be obtained from the board and/or Engineer upon payment of Twenty Dollars ($20.00) for each set of plans and specifications.

Proposals must be submitted on the blank form provided and in a manner designated therein. Each proposal must be accompanied by a bid bond or a certified check in an amount equal to five per cent (5%) of the total bid. The bid bonds or certified checks of all but the 3 lowest bidders, will be returned within 3 days after the opening of bids, while the remaining bonds or checks will be returned as soon as the contract has been executed. The bid bonds or certified checks of the successful bidder, will be retained to pay any loss or damage to the General Sewer District and/or the Town of East Greenbush, in the event said successful bidder shall refuse or neglect to enter into a contract in accordance with his proposal. Acceptance of the bid will be contingent upon the fulfillment of this requirement by each bidder.

The Town reserves the right to consider bids for a period of 45 days after their opening, and the right is reserved to reject all bids.

Town Board
Town of East Greenbush
on behalf of
General Sewer District
by Grace F. Spierre,
Town Clerk

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

RATES

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for April 5th issue closing March 26th

ENGINEERS DESIGNERS DRAFTSMEN

Permanent openings in our St. Louis and San Francisco offices for qualified personnel experienced in design of structural steel and reinforced concrete for work on

BRIDGES & BUILDINGS
HYDROELECTRIC PROJECTS
INDUSTRIAL FACILITIES

Openings also available for mechanical and electrical designers and draftsmen for work on power plants, test facilities, large electrical installations and general industrial projects. Several recent graduate engineers will be added in all categories.

We desire men who want long range employment with ample opportunity for professional development and advancement. Excellent Employee Benefits & Retirement Plan, generous annual leave and sick leave, Blue Cross, paid holidays.

Please write fully to

SVERDRUP & PARCEL, INC.
Engineers — Architects
915 Olive Street St. Louis 1, Mo.

ENGINEERS
Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY

PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE

INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
1805 GRAND AVE. KANSAS CITY 8, MO.

CHIEF ENGINEERS
Electrical & Mechanical
for Supervision of Construction
in Labrador and Newfoundland

Please send complete resume of education and experience

METCALF & EDDY
Statler Bldg. Boston 16, Mass.

GRADUATE SANITARY ENGINEER
OR
CHEMIST EXPERIENCED IN SANITARY FIELD

For work in Consulting Engineers' Office on operation of Sewage Plants, Analysis of Water Sewage and Industrial Waste, and on Design of Sewage Plants, Water Works and Industrial Water Treatment Plants.

Permanent position with paid vacation, sick leave, hospitalization, retirement plan and profit sharing plan.

Submit resume of references, education, experience and salary requirements.

ALBRIGHT & FRIEL INC.
Consulting Engineers
3 Penn Center Plaza Philadelphia 2, Pa.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Civil Engineer—$5,178 to $6,326 yearly. In Hydrology Division of Water Resources Commission. Completes field studies concerning water use and water conditions on a state-wide, river basin, regional or local basis, such studies to include the gathering and tabulation of hydrologic data from all sources. Analysis of such data for preparation of flood and drought frequencies, back water curves, flow-duration curves, mass diagrams, and other related hydrologic studies. Makes field investigations of problems dealing with beach erosion, ground water pollution, floods, drainage and sedimentation. Write Michigan Civil Service, Lansing 13, Michigan.

Engineers experienced in water and sewage works projects or related fields. Opportunity for permanent connection with long established consulting firm. Please state full qualifications, experience, references and salary requirements. Location Ohio. P-9548, Engineering News-Record.

Construction Superintendent—Experienced in concrete building construction. Work in New York State. Must be able to assume complete responsibility. Engineering background preferred. Start immediately. P-9552, Engineering News-Record.

Wanted: Experienced building construction estimator for general contractor located in Southern Connecticut. Excellent opportunity for qualified person. P-9485, Engineering News-Record.

Wanted: Experienced highway and structural engineers for work on expressway design with N. Y. C. consulting engineers. P-9485, Engineering News-Record.

City Engineer's Assistant—For general municipal engineering and administration, salary dependent upon qualifications, state experiences and apply to Service Director, City Building, Mansfield, Ohio.

Old Established firm wants engineer & estimator for diversified general construction: schools, airports, sewage disposals. Must be able to take charge in field and do estimating work. Age 30-45. Must be top man. Permanent position. Salary open. Reply P. O. Box 136, Warren, Ohio.

(Continued on opposite page)

CONSTRUCTION SUPERINTENDENT

Excellent opportunity with one of Delaware Valley's leading engineering and construction companies specializing in Industrial Construction.

Must be thoroughly experienced in all phases of construction, capable of handling several jobs concurrently. Must be cost and system conscious. Must have proven administrative ability. Engineering background desirable.

Interview by appointment only. Write complete information including training, experience, salary and recent photograph to E. I. Troiani.

ROBERT LAMB & SON, INC.
3429 W. Indiana Ave. Phila. 32, Pa.

CIVIL ENGINEER — JUNIOR
College Graduate

—by established Public Utility supervisory-consulting organization. Minimum 3 years experience,—work in connection with design hydro systems, also structural and foundations for steam, hydro, and Diesel Plants. Location New York—some travel future. Reply stating age, education, experience, personal particulars and minimum salary expected.

AMERICAN & FOREIGN POWER COMPANY INC. AND SUBSIDIARIES
2 Rector Street New York 6, New York
21st Floor DI 4-4400, Ext 8494

ENGINEER MANAGER
DETROIT AREA

Qualified Sanitary Engineer with a minimum of 10 years experience in treatment plant operation and management and industrial waste problems. Must be prepared to assume responsibility over entire sewerage system (25 MGD). Submit resume of qualifications, salary requirements and earliest date available.

P-1113, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS NEEDED
PENSACOLA, FLORIDA

Mechanical, Electrical Design Engineers, Instrumentation Engineers, and Draftsmen needed in our office at Pensacola, Florida. Contact:

PATCHEN and ZIMMERMAN ENGINEERS
120 Spring Street, N. W. Atlanta 3, Georgia

DESIGNERS
ENGINEERS

Structural and mechanical on heavy industrial building and materials handling equipment, 44 hr. wk. optional.

MACDONALD ENGINEERING CO
22 W. Jackson St. Chicago 2, Ill.
CEntral 6-1465

POSITIONS VACANT

(Continued from opposite page)

Wanted: Engineer with at least five years' experience in sewage water line construction, with some supervisors background. Opportunity for permanent connection with long established contracting firm. Please state qualifications, references, experience and salary wanted. Write to La Fera Contracting Co., 149 Verona Avenue, Newark 4, New Jersey, or phone HUmboldt 3-8341 between 10 A.M. and Noon.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere, 400 E. Genesee St., Syracuse, N. Y.

Designers & Draftsmen—structural, mechanical & electrical. For work on industrial buildings & power plants. Long range program, top salaries, advancement & vacations. Marbarry Corp., 140 Nassau St., N.Y.C. COrtlandt 7-0322.

Wanted: Highway and structural draftsmen for work on expressways with N.Y.C. consulting engineers. Recent graduates considered. P-9188, Engineering News-Record.

Apprentice Trainees for construction and appraisals. Recent graduates, nonsmokers, male or female. Apply or send resume and references to Construction Survey Co., 101 Park Avenue, N. Y. 17.

Wanted—Building superintendents, estimators carpenter superintendents & general foreman. Excellent opportunities and starting salary. J. L. Simmons Company, Inc., 506 South Wabash Avenue, Chicago 5, Illinois, Webster 9-2355.

Experienced building estimator with Mid-western contractor specializing in industrial, commercial and public works. Furnish experience record, references, salary desired and photograph, if available. Permanent job. P-1093, Engineering News-Record.

Superintendent for school construction in Norwalk area. Licensed engineer preferred. If experienced in large construction will consider man without license. Call Darien, Conn., OLiver 5-1400.

Wanted building construction superintendent and assistant. Good opportunity for the right man. Send resume of experience to P-1091, Engineering News-Record.

Construction Supt. capable of operating multi-million dollar building projects. Experience on industrial, commercial and institutional buildings required. Kindly submit work history and references, stating specific buildings you have constructed, their approximate value, and type of construction. Also state age and marital status. Enclose recent photograph if possible. Interview will be arranged & salary discussed, if application warrants. Location: North Western Ohio. P-1080, Engineering News-Record.

To EMPLOYERS Who Advertise for MEN:

Frequently, when there are many applicants for a position, only the most promising letters are acknowledged. The other applicants never know whether their letters reached a prospective employer or not. These men often become discouraged, will not respond to future advertisements and even question their bona fide character.

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POSITIONS VACANT

100 Civil Engineer Vacancies—The Michigan Civil Service Commission is currently recruiting to fill a large number of positions in the State Highway Department created by an expansion in the road construction program from $70 milion in 1955 to $150 million in 1956. A comprehensive Engineer Trainee Program is offered to graduates of accredited engineering colleges. The program continues for 12 to 18 months including seven week assignments in each of the following: Bridge Construction, bridge design, road construction, road design, road surveys, maintenance, planning and traffic and testing and research (Soils). One hundred and ninety-one persons have entered this program in the last seven years. One hundred and thirty-two remain. The figures speak for themselves. Job opportunity, promotion, 10 hour work week, security, social security, state pension plan, vacation, sick leave and many other benefits generally available only under a progressive civil service system are yours when you work for the Michigan State Highway Department. Salary for the Engineer Trainee Program starts at $4600 plus $20 weekly expense allowance while on most training assignments with 6 month increases to $5200 in 18 months. First promotion brings salary range with maximum of $6800. Next promotion to project engineer carries salary at maximum of $8150. Write for application for Engineer Trainee I to Michigan Civil Service, Recruitment and Placement, Lansing 13, Michigan.

Construction Supt. Required top-notch man for bridge supt., capable of handling both large & small structures. Should have administrative ability to handle multiple unit projects. Location: North Western Ohio. P-1083, Engineering News-Record.

General Superintendent—who is now super-intendent engineer and wants to take next step up with growing N. J. Organization. P-1105, Engineering News-Record.

The Canon City Metropolitan Sanitation Dis-trict, Canon City, Colorado, wishes to contact qualified, experienced and competent sewage treatment plant operator of a new sewage disposal plant. The plant will be completed by late fall or early winter; operator's services begin in early summer, during construction of plant. Address all communications to: Geo. A. Wadleigh, Secretary Canon City Metropolitan Sanitation District P. O. Box 150 Canon City, Colorado.

2 Structural detailers wanted, with checking exp., for expanding organization. Top rate and overtime for experienced men, liberal benefits. S. Kuchma Co. 2555 Dorr St., Toledo 7, Ohio.

Town Engineer to direct engineering activities for the Town of Plainville, Connecticut. Knowledge of municipal engineering required. Salary $6000-$7000 per year. Applications must be on file at Selectmen's Office on or before March 24, 1956. Application forms available at Office of Selectmen, 29 Pierce Street, Plainville, Connecticut or the Office of the State Personnel Director, Hartford or at any office of the Connecticut State Employment Service.

EMPLOYMENT AGENCIES

Wanted Engineers, Designers, Draftsmen-Structural, Architectural, M.E., C.E., E.E. and Ind., also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

Treasurer Controller—Over twelve years se-nior administrant of consulting engineering and construction contracting accts; high level experience includes financing, insurance, job costs, taxes & claims. Proficient in the preparation of concise reports. Prefer New York City area. PW-9410, Engineering News-Record.

Construction Executive, buildings and heavy construction, sound experience bid to completion; qualified to manage a project, branch office or a business, seeks new connection where top man is required. Minimum $15,000. PW-8792, Engineering News-Record.

Executive Civil Engineer, project manager, over 20 years field and office experience estimating, bid to completion, all types earthwork construction; dams, excavation, dredging. Thoroughly competent to assume full responsibility, domestic or foreign. Write PW-9518, Engineering News-Record.

Supt of Construction for either owner or architects or both. Now employed jointly by both on buildings. Seeking change of location to So. California. PW-9191, Engineering New-Record.

EXECUTIVE—MANAGER—ENGINEER

Graduate, Registered Civil, 48, looking for connection where leadership, aggressiveness, forcefulness, ability and clean habits will result in combined salary and bonus exceeding present $16,000 salary. Willing to risk part of salary for benefit of proper bonus plan with future and room for advancement as project or branch manager, general manager, etc., either domestic or foreign.

Have been owner of construction company or in management capacity for past twenty years and know problems of management and employee, value of leadership, co-operation, organization, financing, estimating, cost, planning work, meeting schedules and dealing with public and clients.

Both field and office experience in housing, industrial, light and heavy construction, process plants, sewage and water treatment, drainage, highways and paving. Two years overseas in charge $26 million projects.

PW-1067, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS WANTED

Cost Estimator, heavy const., managerial capacity. Bridges, docks, R.R., highways, sewers. Experienced bid preparation to completion of project. P.E. 35 N.Y.C. & vicinity. PW-9585, Engineering News-Record.

Construction Executive. Licensed Civil Engi-neer desires connection in charge of construction department of multi-plant organization. Handle job from design, estimating, contracting to completion. Thoroughly versed in pricing and economics of all types of construction. Some foreign experience, languages. PW-1020, Engineering News-Record.

Professional Engineer, M.ASCE, advanced de-grees. Registered. Experience: engineering, construction, administration, highways, bridges, buildings, aggregate production, sanitary engineering, engineering teaching. PW-1042, Engineering News-Record.

Construction Engineer, age 34, graduate and registered C.E. Nine years of widely varied field and office experience. Seeking position as Office Engineer with medium size, midwestern construction firm. PW-1101, Engineering News-Record.

Young graduate engineer aggressive am-bitious, tactful. 7 yrs. exper. heavy constr. Knows costs, planning. Desires responsible position with growing firm. PW-1106, Engineering News-Record.

Young Canadian Engineer desires American or foreign position. Married. 3 years structural experience. PW-1092, Engineering News-Record.

C.E. exprc'd fld & offc geom. design. H & V. alin'mt on elev. hw'y intrchgs. PW-1063, Engineering News-Record.

Accountant, Ass't., Office Manager. Overseas desired. Age 31, 8 years experience, 1 with major heavy constructor. Also experienced property, commissary. PW-1069, Engineering News-Record.

Supt. or Gen Foreman on construction of roads, dams, waterways, mains, excavating. All types of heavy equipment. In New England area. PW-1118, Engineering News-Record.

Building Construction superintendent for large general contractor desires position as general superintendent, manager or partner with a general building construction firm—on industrial, institutional & commercial construction. PW-1115, Engineering News-Record.

Supt., age 30—commercial, mass housing, in-dustrial, presently employed as project mgr. on hospital project. Proven ability to take charge all phases. With present employer 4 yrs. Desire change, willing to relocate. Available soon. PW-1070, Engineering News-Record.

Construction Engineer—28, C.E. graduate, 7 years experience in supervision, field and office work on power plants, dams, and bridges. PW-1071, Engineering News-Record.

Estimator — General contractor complete competitive bids industrial, public, commercial and office details, buy, expedite, job costs, handle subs. Long experience, excellent record. PW-1066, Engineering News-Record.

CIVIL ENGINEERS

Work and live in wonderful WISCONSIN

A rapidly expanding highway program offers:

Permanent civil service positions
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Starting salary based on experience

Civil engineering degree or professional registration required.

Write to:

Personnel Officer
State Highway Commission of Wisconsin
State Office Building
Madison 2, Wisconsin

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ENGINEERS

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HIGHWAY
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ARCHITECTS

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Rochester, Penna.

Send Resume Including Education, Experience, Salary Requirements and Availability TO:

Richard L. Shaw, *Personnel Director*

Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building Rochester, Penna.

SURVEYORS

(TOPOGRAPHIC)

Challenging opportunities for Party Chiefs and Instrumentmen experienced in map survey control. Experience with aerial photographs and theodolites desirable. Permanent positions; considerable travel necessary. Forward detailed resume and salary desired.

AERO SERVICE CORPORATION
Photogrammetric Engineers
210 E. Courtland St. Phila. 20, Pa.

ENGINEERS

CIVIL, HYDRAULIC, DAM OR RECENT CIVIL ENGINEERING GRADUATES
With no to 3 years experience

This is your opportunity for BROAD EXPERIENCE in planning, design, construction and operation of flood control projects in Pennsylvania. Work includes broad phases of hydraulics, hydrology, soil mechanics, and reinforced concrete design. Salary from $4260 to $5652 per annum depending on qualifications.

CONSTRUCTION

Minimum of 5 years experience as Construction Engineer with knowledge of concrete and compacted earth fill construction. Will serve as Resident Engineer on Flood Control projects in Pennsylvania, in charge of inspection, survey and related office work.

Fringe benefits including—Liberal promotion policy, vacation, sick, and holiday leave benefits and retirement system.

Address reply to

P-1048 Engineering News-Record
330 W. 42 St., New York 36, N. Y.

State Education, experience, age, salary expected and references.

STRUCTURAL DETAILER

Permanent job for man with at least 3 yrs. experience with structural steel fabricators. Technical education not required. Apply by letter giving resume of background and experience, and salary expected.

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FORT WAYNE STRUCTURAL STEEL CO.
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Top rates for exp. men, long program, overtime, vacation, holidays.

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113 West 42nd St. New York 36, N. Y.

HEAVY CONSTRUCTION ESTIMATORS

Major southwestern general contractor expanding heavy construction department. Need estimators with experience and ability to investigate, take-off, and price wide variety of heavy construction type work. Excellent opportunity for young men to obtain desirable position with established firm. Reply indicating experience, education, age and availability in first correspondence to

P-9361, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ASSISTANT CITY ENGINEER

In charge of planning, organization and administration of the Division of Engineering, Department of Public Works. Qualifications: Degree in Civil Engineering plus 4 years of professional municipal engineering experience in an administrative or supervisory capacity.

Contact: Personnel Department, City Hall, Springfield, Missouri.

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Design experience in one or more of the following fields: Instrumentation and controls for Industrial Equipment, Refinery and Chemical Plant Processes, Steam Power Plants, Materials Handling Equipment, Metallurgical Process Equipment such as metallurgical furnaces, kilns, crushers, or related heavy machinery, heating and ventilating, or industrial plant layout.

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Responsible design experience on panel boards, industrial controls, power distribution or lighting.

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Engineers - Constructors

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5 West 45th St. New York 17, N. Y.
220 Bush St., San Francisco, Calif.

Confidential interviews can also be obtained at: Scanlon Building, Houston, Texas, or Roosevelt Building, Los Angeles, Calif.

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WE ARE A distinguished international company pioneering in all phases of new industrial design and construction, including Atomic Energy. A company with limitless future in the new age we are helping to create by a fast moving, really professional team of

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WE WANT Qualified electrical, structural, mechanical, architectural, designers and engineers for our New York, Cleveland, and Cincinnati, Ohio offices.

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ENGINEERS

Engineers who wish to investigate these opportunities should submit a resume stating their education, experience and salary requirements to:

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ENGINEERS AND BUILDERS
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Openings for highway engineers, draftsmen, detailers, designers and young graduate Civil Engineers interested in future as highway design engineers.

Excellent working conditions. Job security with ample opportunity for advancement. Voluntary employee benefit and retirement plan, generous annual leave and sick leave, Blue Cross, paid holidays.

Send full resume, salary desired and references to

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PIPING LAYOUT, STRUCTURAL STEEL, CONCRETE, PROCESS HEATERS, EQUIPMENT SPECIFICATIONS, LAYOUT AND PROCESS DESIGN. ALSO PIPING AND ELECTRICAL DRAFTSMEN.

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You'll work with modern equipment in large air-conditioned quarters. Free parking on premises.

Cleveland has attractive residential areas, excellent schools and colleges for you and your family. McKee makes generous transportation and moving allowances.

Write for an interview giving education and experience. No age limitations. All letters kept strictly confidential. Write today to:

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Cleveland 1, Ohio

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Concerned with Hydro-Electric Power System Studies
requires

CIVIL, ELECTRICAL, and ESTIMATING ENGINEERS

With both field and office experience, preferably involving hydraulic design or cost estimating. The work will consist of hydro-electric investigations related to new power projects with a wide territorial distribution and work in connection with existing developments. Ability to read and speak French or Spanish is highly desirable. Work may involve some foreign travel.

Please write stating qualifications and experience to

P-1077, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

FIELD ENGINEER

Nationally known organization offers excellent opportunity for young civil engineer graduate. Engineering consulting and promotional work in highway and concrete fields. Location Ohio, Indiana and Kentucky area. Car allowance and expenses. Permanent position. Salary based on qualifications and experience.

P-1010, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Complete parts are available for Sterling, Jaques and other make earth boring machines. We completely rebuild and repair all makes diggers in our well equipped shops.

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CONSTRUCTION CONSULTANTS
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Appeals: Disputed questions of fact under Federal construction contracts require a skilled analysis in order to obtain maximum benefit from appeals. My experience is offered to contractors and attorneys. SS-9375, Engineering News-Record.

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Gunite Construction Business for sale—owner retiring. Box 12188 Houston, Texas.

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Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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Combination Shovel-Dragline; Cummins diesel engine. Unit new in 1952. Good condition.

FS-1122, Engineering News-Record
330 West 42nd St., New York 36, N. Y.

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1955, powered by a General Motors diesel Model 451 engine with a torque converter. Serial No. 55230. Engine No. 4C-3339. Used 5 months. Price: $17,000.00.

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These machines are in very excellent condition.

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3000B, 22 ft. boom, 18 ft. stick, 2 Yd. Dipper, Air Controls, 16'-4" Crawlers, Caterpillar D-17000 Diesel Engine. Serial #3001. New 1954.

ANDERSON EQUIPMENT COMPANY
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Phone: LEhigh 1-6020

Johnson concrete batching, mixing plant, complete, large, two 4-yd. Koehring mixers, bins. Locomotives, 15 to 100 tons, diesel, elec., gas. B-Monighan Walking draglines, 9, 7, 5W, 200W. Shovels, cranes, draglines, ½ to 23 yds. Clyde 20 Whirley crane, 45-ton, electric. Locomotive cranes; steel stiffleg derricks (5). International paving batch trucks (25). Colby hammerhead crane, 292', 14-ton.

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FOR SALE
Model 6 NORTHWEST SHOVEL

Equipped with Murphy Diesel engine, late model in like new condition at about one-half price.

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Lima 34, 1951, 20' hoe boom, Cat. 318, long wide crawlers, worm boom hoist, 1 yard bucket, extra counterweight. Priced to sell.

CYRIL J. BURKE INCORPORATED
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TWinbrook 2-1120

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PIONEER Washing Plant Portable—Like new Model 300-WA, 310% with 58 pieces 6" water pipe; Jaeger 6" centrifugal pump; Eagle Twin screw sand classifier & extra Screens. Price: $24,000 fob Cleveland, Ohio. Barber Greene 60' portable conveyor $2,000; 2—Farquhar Trough Conveyors 80' long by 24" wide $2,500 each.

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Barber Greene Trencher
Model 14 C (Chrysler 8 Engine)
Digs 18"-21" and 24" Trench 8'4" Deep
New Bucket line and teeth
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At Condition

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80 ton G.E. Diesel Electric, 4 Drive Motors
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25 to 50 ton Loco. Cranes, Graders & Tractors

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Edison 4-9471

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1951 Littleford, 101 on 1951 2 ton 2 speed Chevrolet truck, 1000 gallon tank, circulating shifting spray bar, 15 H.P. engine. Very good shape. Call: DI. 1-7712 days or SK. 2-0215 evenings.

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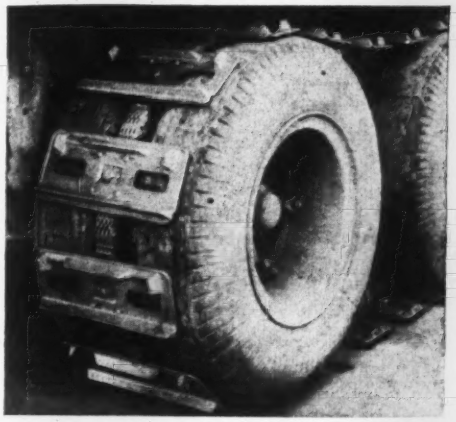

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Lima Model 802 Crane-Dragline

Model D-1700 Caterpillar Engine, Oversize cats, full accessories.

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2400 LIMA

Dragline — 110 Ft. Boom
2—6 Yd. Buckets, Hamilton Diesel Engine. Machine recently Overhauled.

PRICE $110,000.00

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Phone: LEhigh 1-6020

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1—120B Bucyrus Erie shovel, electric. Ser. No. 51715. With 1-5CY and 1-6½CY dipper and 1000 LF electric cable. Available about May 1, 1956.

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Over 10,000 sq. ft. Bulldog Steel Forms for commercial and residential concrete walls. Good Condition. Reasonably priced for quick sale. Write

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Current Models Sale or Rent
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1—Northwest Crawler Crane Model No. 95. Serial No. 12527. Powered by Murphy Diesel Model MEC. 100-foot boom. Excellent condition. Price $34,000.00. (Optional: with rear platform to house pile driving equipment, add $1,000.00).
1—P. & H. Model 855 Crawler Shovel Crane, Serial No. 10984. Powered by G.M. 671 Diesel. Equipped with shovel front and 90-foot boom. Excellent condition. Price $28,000.00. (Optional: rear platform to house pile driving equipment, add $750).
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Adams Div., LeTourneau-Westinghouse Co. 57
Allis-Chalmers Mfg. Co. (Tractor Div.) 34, 49, 62, 66, 74, 83
Amer. Hoist & Derrick Co. 38
Amer. Road Equip. Co. 86
Amer. Surety Co. 88

Bakelite Co., Div. Union Carbide & Carbon Corp. 105
Belmont Iron Works 90
Bethlehem Steel Co. 89
Bruning Co., Inc., Charles 37
Butler Mfg. Co. 43
Byers Co., A. M. .....2nd Cover

Caterpillar Tractor Co. 31
Celotex Corp., The 69
Chain Belt Co. 84
Cimco 28
Clearprint Paper Co. 113
Concr. Grinding Corp. 101

Detroit Diesel Engine Div., G.M.C. 95
Detroit Steel Prod. Co. 44, 45
Dicalite Div., Great Lakes Carbon Corp. 80
Dresser Mfg. Div., Dresser Ind. 71
Dudgeon, Inc., Richard 90

Eastman Kodak Co. 76
Economy Forms Corp. 94
Enjay Co., Inc. 103
Eshelman Co. 98

Firestone Tire & Rubber Co. 81
Flexible Road Joint Machine Co. 52, 53
Flintkote Co., The 56

General Electric Co. 64, 65
Georgia-Pacific Plywood Co. 40
Goodyear Tire & Rubber Co. 18
Grace Mfg. Co., W. E. 112
Greenlee Tool Co. 54
Griffin Wellpoint Corp. 88
Gunite Concr. & Const. Co. 86

Hazard Wire Rope Div., Amer. Chain & Cable Co. 9
Hercules Powder Co. 73

Inland Steel Prod. Co. 30
International Harvester Co. (Trucks) 91
Irving Subway Grating Co. 48

Kern Instr. Co. 97
Kinnear Mfg. Co. 86

Leap Concr. Inc. 36
LeRoi Co. 87
LeTourneau-Westinghouse Co. ..55, 59, 61
Lone Star Cement Corp. 20

Macomber, Inc. 108
Maginis Power Tool Co. 32
Manumine Research & Development Co. 14
Martin Decker Corp. 90
Master Builders Co. .....3rd Cover
McKiernan-Terry Corp. 98
Merriman Bros. Inc. 41
Moretrench Corp. 98
Murphy Diesel 1

Neenah Foundry Co. 51
Northwest Engr. Co. 3

Pennsylvania Drilling Co. 86
Phoenix Bridge Co. 94
Pittsburgh Corning Corp. 107
Powder Power Tool Corp. 77

Ramset Fasteners, Inc. 70
Raymond Concr. Pile Co. 100
Reo Motors, Inc., Ind. & Marine Eng. Div. 12, 13
Republic Steel Corp. 78, 79
Reynolds Metal Co., Inc. 93
Rilco Laminated Prod. Inc. 72
Rust-Oleum Corp. 29
Ryerson & Sons, Inc., Jos. T. 16

Sauerman Bros., Inc. 10
Servicised Prod. Corp. 85
Smith Co., S. Morgan 58
Smith Engr. Wks. 11
Spencer, White & Prentis, Inc. 90
Sprague & Henwood, Inc. 94
Standard Dry Wall Prod. 42
Stoody Co. 96
Stow Mfg. Co. 15
Symons Clamp & Mfg. Co. 2

Texas Co. 4, 5
Timber Engr. Co. 82
Timber Structures, Inc. 92
Timken Roller Bearing Co. .....4th Cover
Tippett & Wood 98

U. S. Steel Corp. 6, 7
Universal Bldrs. Supply Co. 111
Universal Mfg. Co. 8

Viber Co. 68

West Coast Lumbermen's Assoc. 50
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 99
Woodward & Dickerson Inc. 72

Yeomans Bros. Co. 60

Professional services 126

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities ...118-121
Educational 122
Proposals 115-117
Equipment
(For Rent, Sales Wanted)...122-126

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Write Your Congressman!

A $600,000 BUDGET REQUEST by the Department of Commerce to improve its statistical service to construction will soon come up for Congressional decision via hearings before the House Appropriations Sub-Committee. From every possible viewpoint it should be approved. Construction is the nation's largest, busiest industry. Its efficient functioning is essential to the health of the nation's economy. Its statistical guides are far from adequate. And, finally, the funds requested are modest in amount.

Last year, when the same request was made, the Senate approved it but the House turned it down. Now, in this year of seriously increasing materials shortages, these improvements are even more vitally needed—and one of the purposes planned for the increased funds is to learn what quantities of materials are required by various types of construction. The other main need for the increased funds is to improve accuracy in sampling and estimating the total volume of construction on the one hand, and the total volume of repair, maintenance, alteration and improvement of existing structures on the other.

With widespread shortages of materials and equipment existing at the very beginning of this year's construction season, thoughtful construction men must entertain grave doubts that our national capacity to produce construction materials is adequate to supply even today's volume of new construction and repair. If this is so, what of tomorrow's even greater needs? Will construction volume bump into a ceiling set by materials shortages?

Certainly better facts than our present industry statistics give us are needed to solve this basic problem.

The present monthly and annual estimates of total construction work "put in-place" were designed to measure construction's contribution to gross national product. They were a depression baby, and now the formula used to convert contract dollars into "work-put-in-place" is out of date and does not reflect the much faster tempo of today's construction operations. This alone could cause the construction volume increase statistics to lag behind materials use or delivery needs. Some of the money requested of this Congress would be used to make field studies to update this work put-in-place formula.

Present estimated construction totals are obtained by projecting huge samplings by private agencies of contracts awarded or work started. This is done without benefit of a good measure of how much volume comes from big projects, how much from small ones. So some of the new money would be used to get construction cross-section samples in selected areas to obtain better knowledge of the mix of big, medium and small jobs.

Some of this money would also be used to get a good measure of repair-maintenance volume and its demands on basic materials and equipment supplies. This is now the weakest segment of the construction statistics service provided by the government.

Construction has outgrown guesswork in measuring the adequacy of its basic supplies. And since construction contributes so much to our national economic health, it is decidedly risky to continue taking its pulse on inadequate stethoscopes or reading its temperature on a leaky thermometer.

But if you want good instruments for checking the health of your industry you will have to ask for them. Write your Congressman and ask him to support this $600,000 appropriation request for the Department of Commerce, Business and Defense Services Administration.

Too Many Winter Shutdowns

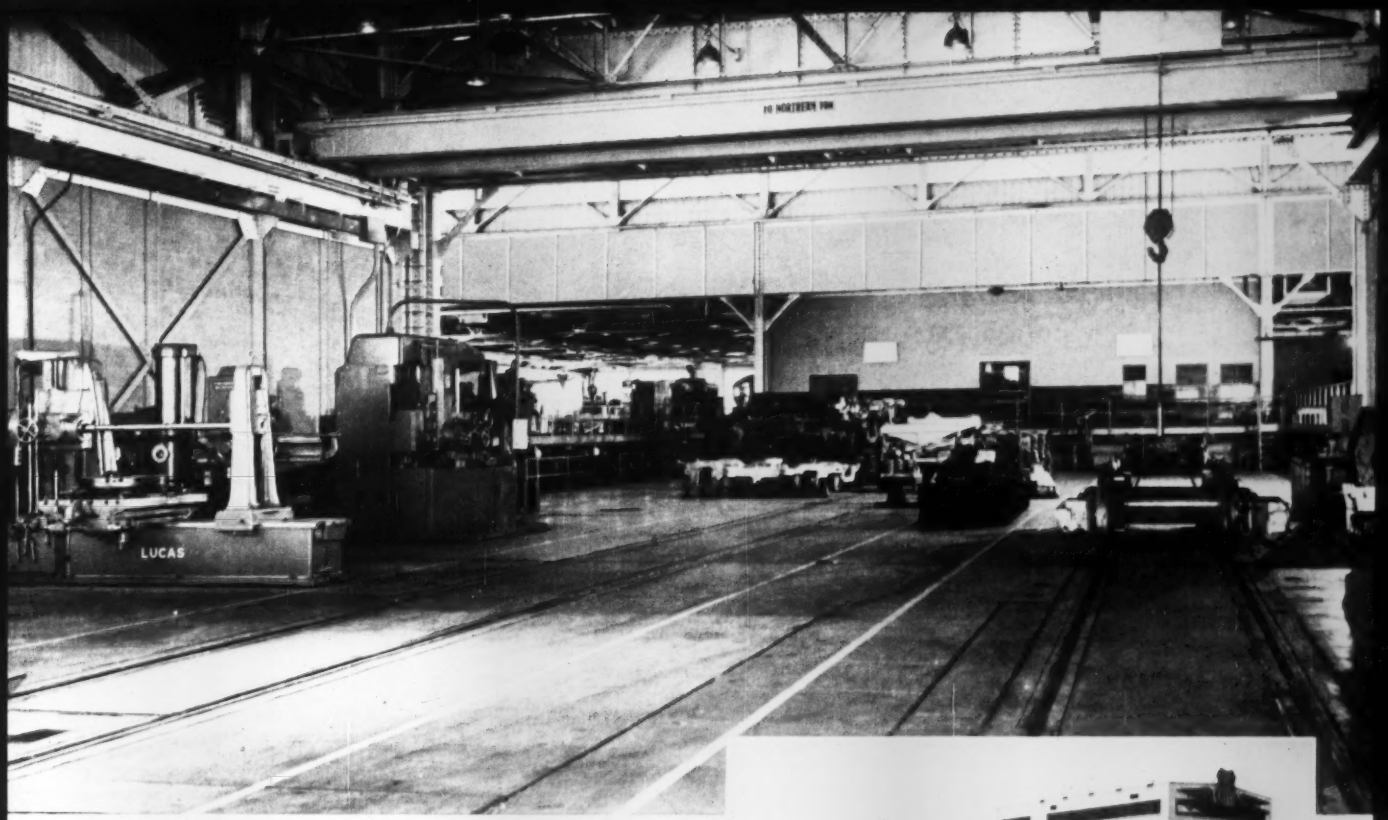
IT IS NATURAL THAT OUR GOOD NEIGHBORS to the North should have a special concern for the problems of winter construction, so it was not surprising that the subject had a prominent place on the program of the Canadian Construction Association's recent annual meeting. But it was not the reports of substantial progress in increasing winter construction nor of successful winter construction methods that caused the most comment. This came from spectacular figures cited by Canadian Minister of Labour, Hon. Milton Gregg.

In stressing the need for still more attention to increasing building operations during winter months, Mr. Gregg pointed out that last year Canada lost the equivalent of 166,000 men's work from shut-downs of construction due to winter weather. In contrast, over a three-month period, strikes and labor disputes on construction resulted in loss of only 640 men's work.

Making every possible allowance for Canada's excellent labor record on construction in recent years, the contrast between these two figures is still remarkable. It shows clearly how far we have to go in smoothing out the level of construction throughout the year, for U. S. figures would probably tell a similar story, in the northern part of the country at least.

To a considerable degree the expansion of winter construction rests on careful project planning. This is a management function, as is also the development of construction methods and worker protection required to combat the weather. Yet labor has a responsibility for working methods, too, so that its efficiency will not be unreasonably below what it attains under more temperate weather conditions.

Regarded as a team operation, winter construction can grow far beyond its present size. Reductions in unemployment and cuts on overall project costs and delays are the rewards.



Union Pacific Railroad's new diesel repair and maintenance shop, Salt Lake City, Utah. Constructed by the company's own engineering department under the direction of W. C. Perkins, Omaha, Chief Engineer and R. M. Brown, Salt Lake City, District Engineer. William N. Stockton, Salt Lake City, Resident Engineer in charge of actual construction.

MASTERPLATE "Iron-Clad" Concrete Floors in Union Pacific's new Diesel Shop

Union Pacific Railroad's decision to install a Masterplate surfaced floor in their new Salt Lake City diesel repair shop resulted from their careful study of ways to obtain a floor that would aid in the smooth flow of work, reduce maintenance expense and improve plant safety.

Many million square feet of Masterplate armored floors in service in America's leading plants show that Masterplate floors are 4-6 times more wear-resistant than the best plain concrete floor... are non-dusting, corrosion-resistant, easy-to-clean, non-slip and spark-safe.* Non-colored and colored.

A Masterplate "iron-clad" concrete floor is the lowest cost floor you can install in your new plant. Your badly worn concrete floors can economically be made *better* than new by resurfacing with Masterplate. *Full information on request.*

*Static-disseminating, spark-resistant floors are produced with DPS Masterplate.

Thick armored surface makes MASTERPLATE Floors 4-6 TIMES MORE WEAR RESISTANT than the best plain concrete.

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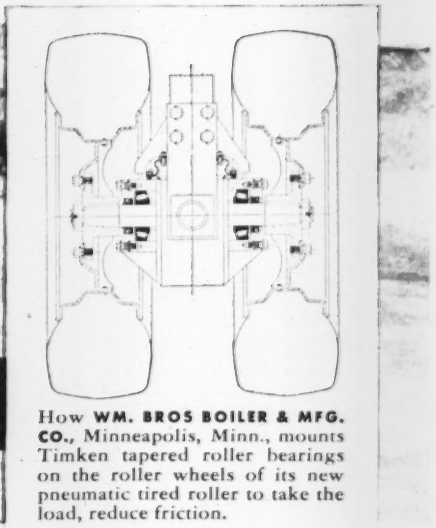

How **WM. BROS BOILER & MFG. CO.**, Minneapolis, Minn., mounts Timken tapered roller bearings on the roller wheels of its new pneumatic tired roller to take the load, reduce friction.

How TIMKEN® bearings give roller free and easy ride, keep it rolling

HOW to assure free turning of wheels and shafts under a 9-ton load was one of the problems when this new Bros self-propelled roller was designed. Engineers came up with the answer by using Timken® tapered roller bearings on front wheels and rear drive axles. With heavy loads absorbed and friction virtually eliminated by Timken bearings, wheels and shafts turn freely and easily. The roller works steadily day-in-and-day-out.

Because of their tapered construction, Timken bearings take both radial and thrust loads in any combination. Full line contact between Timken bearing rollers and races provides extra load-carrying capacity.

What's more, Timken bearings practically eliminate friction because they are designed by geometrical law to have true rolling motion; and manufactured with microscopic accuracy to conform to their design.

Bearing closures are more effective because Timken bearings hold housings and shafts concentric. Dust and dirt can't get in—lubricant can't get out. Maintenance is minimized.

And with Timken bearings in the hydraulic steering assembly, steering is easier. Light pressure on the steering wheel is all that's needed to guide the roller.

No other bearing gives you all the advantages that Timken bearings give you. We even make our own fine alloy steel—America's only bearing manufacturer that does. Whether you buy or build machinery, make sure the bearings carry the trade-mark "Timken". It tells you the bearings are No. 1 for value. The Timken Roller Bearing Company, Canton 6 Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

WE MAKE OUR OWN STEEL

The special grade alloy steel which gives Timken bearings their strength and resistance to wear is made in our own steel mills.

Only Timken tapered roller bearings have these advantages: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. Timken fine alloy steels.

TIMKEN

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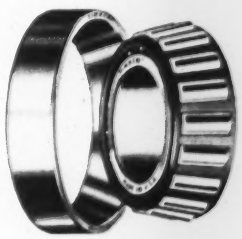
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL AND THRUST ▭ LOADS OR ANY COMBINATION